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EFFECTS OF MITIGATING CIRCUMSTANCE INFORMATION AND SOCIAL CENSURE ON ANGER AND RETALIATION

by

© THOMAS E. JOHNSON

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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ABSTRACT

The present research project examined the effect of attributionally relevant information on an individual's reactions to a provoking incident and on his subsequent behavior. Of specfic interest in the investigation was the question of whether reductions in aggression observed under nonarbitrary, rather than arbitrary frustration result from a lowered instigation to aggress, or enhanced inhibitions to behave aggressively.

To examine these issues, 110 men received one of two levels of mitigating circumstance information either prior or subsequent to being insulted by a co-worker. Participants were then provided with an opportunity to deliver aversive noise to the co-worker under either high or low social censure conditions. Physiological data and self-report measures revealed that participants who learned of mitigating circumstance information prior to being provoked by the co-worker exhibited smaller increases in physiological arousal and reported less annoyance immediately subsequent to provocation than did those who learned of mitigating circumstance information after insult. Consistent with these findings, retaliation data showed that angered participants evaluated their provoker more favorably and retaliated less when they learned of mitigating

circumstance information prior, rather than subsequent, to being insulted.

These findings supported attribution theory assumptions that mitigating circumstance information that is known prior to the provoking incident influences the individual's interpretation of harm, thereby reducing anger and the instigation to aggression. It was suggested that the reduced impact of mitigating circumstance information on annoyance and retaliation that is acquired after provocation may reflect the provoked individual's shift of attention from cues surrounding harm to a consideration of inhibitory factors for retaliation. As a consequence, cues concerning mitigating circumstances will be more relevant and more likely utilized when available at the time of provocation, but receive less weight when acquired after the individual has interpreted his reaction to the provoking incident and anger has been aroused. Finally, the results were discussed with respect to their implications for the appraisal of sanctions for aggression and retaliation.

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INTRODUCTION

In attempting to understand how an individual's perception and interpretation of a situation affect the expression of aggression, recent analyses concerning the relationship between provocation and retaliation have evidenced a shift from learning and motivational analyses (Bandura, 1973; Berkowitz, 1971; 1974; Buss, 1971), to a view that emphasizes the role of attributions in determining the level of anger and hostility (Ferguson & Rule, 1983; Jones & Davis, 1965; Rule & Nesdale, 1976). Central to the attributional approach is the postulate that the perceiver's interpretation of instigating conditions surrounding the harmful act directly affects the degree of anger aroused, and thereby mediates the relationship between provocation and the level of retaliation (Rule & Nesdale, 1976). Although it is acknowledged that attributionally relevant information may operate on the willingness to express aggression (Zillmann, 1979), attributional approaches deriving from a cognitive labeling perspective (Rule, Ferguson, & Nesdale, 1980) have implicitly assumed that the crucial function of cues associated with provocation is to instigate anger arousal differentially. Further, the retaliatory aggressive response is assumed to depend directly on the degree of anger aroused.

While a number of studies have obtained evidence consistent with assumptions that aggression is reduced when

there are mitigating circumstances for attack (Bryant & Zillmann, 1977; Dyck & Rule, 1976; Rule & Percival, 1971), there is currently no direct evidence that bears unequivocally on the role of attributionally relevant information in mediating aggression. Further, attempts to determine whether mitigating circumstance information affects the instigation to aggress, or conversely, inhibition of the expression of aggression (Burnstein & Worchel, 1962; Rule, Dyck, & Nesdale, 1978; Rule & Percival, 1971), have not provided conditions adequate to compare the two processes. Thus, despite evidence that the provision of mitigating circumstance information may reduce retaliation, the mediating role of attributions in the development of anger has not been established. As a consequence, a central issue surrounding the attributional approach to aggressive behavior is whether differences in observed aggression actually reflect differences in the level of anger determined by appraisal of the aggressive act, or conversely, reflect the inhibition of hostile and aggressive responses.

In view of these issues, the goal of this research project was to to assess the effect of attributionally relevant information on individuals' instigation to aggress and their level of retaliation against a frustrator. Specifically, the research intended to clarify the instigation - inhibition issue by (1) assessing whether the

decreases in aggression observed under conditions of nonarbitrary rather than arbitrary frustration are due to differences in the level of instigation at the time of retaliation, or the inhibition of aggressive responses, and (2) examining whether the processing of attributionally relevant information is affected by differences in the time that information is made known during the provocation - retaliation sequence.

RELATIONSHIP TO EXISTING RESEARCH AND LITERATURE

According to attribution theory (Heider, 1958; Kelley, 1972), the tendency to reciprocate another person's harm will depend upon the attribution of causes for the harmful behavior. In an elaboration of this view, Jones and Davis (1965) suggested that one function of the analysis of causes surrounding an action is to enable the perceiver to establish the intentions of the actor in performing the action. To the extent that the harm is viewed as intended, the recipient of harm will be more inclined to appraise his attacker negatively and to reciprocate harm than if the attack is viewed as reasonable or nonarbitrary.

While a number of studies have demonstrated that attack or annoyance does produce less retaliation when it occurs under mitigating circumstances (Kregarman & Worchel, 1961; Pastore, 1952; Zillmann, Bryant, Cantor & Day, 1975; Rule, Dyck, & Nesdale, 1978), the mechanism for this effect has not been established. In one analysis, Ferguson and Rule (1983) argued that mitigating circumstance information influences the relationship between provocation and retaliation by affecting the degree to which anger is instigated. In their view, inferences concerning the justifiability and blameworthiness of another person's harmful behavior occurs between the action and the judged malevolent intent of the action to determine directly the degree of anger aroused and the subsequent expression of

aggression. Thus, in instances where there are mitigating circumstances for attack, less malevolent intent is presumably ascribed to the actor, and hence, less anger is aroused. Conversely, to the extent that harm is appraised as intended, emotional reactivity should be enhanced, and retaliation is more likely. According to this position, the crucial role of attributionally relevant information is to affect the instigation to aggress.

In contrast, alternative formulations concerning the cognitive mediation of aggression have viewed the role of mitigating circumstance information as affecting the inhibition of aggressive responses to provocation. According to Burnstein and Worchel (1962), for instance, knowledge of mitigating circumstance information fails to reduce the emotional reaction to provocation, but acts to inhibit the aggressive response. Thus, individuals who are aware of mitigating circumstances for attack are as motivated to aggress as individuals who judge harm as malevolently intended, but presumably inhibit aggressive responses to avoid social sanctions. In this view, mitigating circumstance information affects the appraisal of response appropriateness rather than the initial perception of harm in engendering the emotional response to provocation.

Consistent with assumptions embodied in the frustration-aggression hypothesis (Dollard, Doob, Miller, Mower, & Sears, 1939), early analyses concerning the

relationship of provocation and hostility assumed that the expression of aggression to a frustrating event is largely a function of the strength of anticipated punishment for behaving aggressively. However, Pastore (1952) in addressing the arbitrariness of the frustrating event, suggested that arbitrary frustration may not be perceived as frustrating and thus fails to arouse annoyance motivated hostility. According to Pastore, the arbitrariness of frustration may affect both the instigation of aggressive drive and the inhibition of aggressive responding depending upon the degree to which the frustrating agent is justified in his or her action. Consistent with this view, Cohen (1955), suggested that when a frustrating situation is cognitively appraised as reasonable, aggressive impulses may diminish.

The issue of whether the observed decreases in aggression under nonarbitrary frustration conditions are due to differences in instigation or inhibition was first investigated in a series of studies by Worchel and his associates (Rothaus & Worchel, 1960; Kregarman & Worchel, 1961; Burnstein & Worchel, 1962). Employing a projective technique, Rothaus and Worchel (1960) found that questionnaire respondents provided a greater number of hostile responses for a fictitious other than for themselves in response to frustrating situations, suggesting that when inhibitions against hostile reactions are lowered more aggression will be expressed. However, respondents still

expressed significantly more aggressive responses to the arbitrary than nonarbitrary situations. Thus, although Rothaus and Worchel interpreted the reduction in the expression of aggression under nonarbitrary frustration to reflect the arousal of inhibitory or avoidance responses, there was evidence to suggest that respondents experienced less hostility to nonarbitrary than arbitrary situations.

In an experimental investigation, Kregarman and Worchel (1961) failed to find significant differences between frustrating conditions that varied in the reasonableness of frustration on measures of aggression toward the frustrator, but observed that subjects under nonarbitrary frustration conditions showed significantly more negative evaluations of themselves. These authors interpreted this finding as evidence for inhibition because according to frustration-aggression theory, displacement of aggression toward self or objects is expected when aggression is inhibited. However, other findings revealed that subjects who expected frustration were less aggressive than low expectation subjects, suggesting that instigation differences may have occurred.

In a further investigation to assess the relative influence of instigation or inhibition in decreasing the amount of aggression observed under nonarbitrary frustration, Burnstein and Worchel (1962) either annoyed or did not annoy groups of male subjects and subsequently

provided them with an opportunity to aggress against their frustrator under public or private rejection conditions. Consistent with their assumption that decreases in the strength of inhibitory forces (i.e., from public to private rejection conditions) should result in increased aggression against the frustrator if inhibition were operating, more aggression against the frustrator was observed in the private than public rejection conditions. However, despite this apparent support for the inhibition position, the observed increase in aggression from public to private rejection was greater following arbitrary than nonarbitrary frustration, suggesting some differential instigation due to the arbitrariness of frustration.

Employing a similar rationale, Rule, Dyck, and Nesdale (1978) found evidence favoring the instigation hypothesis. In this study, male subjects were deliberately or not deliberately frustrated by a teacher in a concept learning task. Following the task, subjects were provided with an opportunity to prevent the teacher from gaining employment under public or private evaluation conditions. Consistent with previous findings, more aggression was expressed toward the teacher when frustration was arbitrary and when evaluations were private. However, other findings revealed that the difference in the amount of aggression expressed against the frustrator between public and private evaluation conditions was less following nonarbitrary than arbitrary

frustration. Further, the frustrator was evaluated as more competent, friendly, and likeable under nonarbitrary conditions than was the arbitrary frustrator. In interpreting these findings, Rule et al. suggested that subjects in the nonarbitrary frustration condition were clearly less instigated to aggress and less inhibited from expressing their lower amount of aggression due to the lower personal significance of provocation.

In the foregoing studies, mitigating circumstance information was provided prior to, or concomitant with frustration, thus making it difficult to determine whether this information affected the development of anger, or inhibited the aggressive response. In an alternative approach, three studies attempted to assess the impact on retaliation of mitigating circumstance information which was provided subsequent to provocation. Mallick and McCandless (1966) found that while subjects did not differ in their dislike for their frustrator prior to either learning or not learning of mitigating circumstances for his behavior, subjects who were provided with a reasonable explanation subsequent to provocation exhibited less aggression and increased liking toward their frustrator. In a second study, Zillmann, Bryant, Cantor, and Day (1975) obtained evidence that knowledge of mitigating circumstance information provided subsequent to provocation significantly reduced retaliation against a frustrator, unless conditions of

extreme arousal prevailed at the time the information was presented. Finally, Kremer and Stephens (1983) provided evidence that mitigating circumstance information reduced retaliation against a provoker when information was presented immediately subsequent to provocation, but did not affect retaliation when presented after a time delay.

While these latter three studies appear to favor the inhibition position by showing that individuals who are equally instigated to aggress will inhibit their desire to retaliate when provided with mitigating information concerning provocation, they do not provide direct evidence concerning which process underlies the observed reduction in aggression. As noted by Zillmann and Cantor (1976), the question of whether the decreases in aggression observed in these studies resulted from the inhibition of hostile feelings rather than reduced anger cannot be adequately answered in the absence of evidence concerning subjects' motivation to aggress at the time of retaliation. Thus, while subjects may have been equally motivated to aggress by provocation, the subsequent provision of mitigating circumstance information for attack may have reduced anger by facilitating recovery from the emotional state, such that subjects were less instigated at the time of retaliation and simply expressed less anger.

In a study designed to clarify whether the decreases in aggression observed under conditions of nonarbitrary

frustration might be due to differences in the motivation to aggress at the time of retaliation, Zillmann and Cantor (1976) attempted to assess emotional reactions to provocation, as measured by physiological excitation, under conditions where subjects received mitigating circumstance information prior or subsequent to provocation, or did not learn of mitigating circumstance information. Analysis of subjects' physiological responses tended to favor the differential instigation hypothesis. Subjects exhibited less intense reactions to provocation when provided with mitigating circumstance information than when not provided with information. Further, subjects who received mitigating circumstance information prior to provocation exhibited the least intense reactions to provocation, while both prior and subsequent information conditions had returned to base levels of excitation by the time of retaliation. Thus, the provision of mitigating circumstance information prior to provocation tended to prevent emotional reactions from developing, while the subsequent provision of information tended to facilitate recovery from the emotional response. In contrast, physiological reactivity of subjects who did not learn of mitigating circumstances for provocation remained elevated for the duration of the experiment.

Contrary to these data, measures of behavorial aggression against the frustrator were only partially consistent with the instigation hypothesis. Although

subjects in both mitigation conditions had returned to physiological base levels by the time of retaliation, only subjects who learned of mitigating circumstance information for attack prior to provocation expressed less aggression toward the frustrator. Thus, while there was little evidence for the inhibition of aggression, differences in motivation to aggress as measured by physiological reactivity, did not parallel differences in retaliation.

In another study, Kremer and Stephens (1983) found evidence that mitigating circumstance information provided subsequent to aggression reduced retaliation against a frustrator, but only when information was provided immediately subsequent to provocation rather than after a time delay. However, under conditions identical to those employed by Zillmann and Cantor (1976), mitigating circumstance information provided immediately subsequent to provocation failed to affect reductions in retaliation relative to no information controls when participants witnessed a second provocation. Although Kremer and Stephens attributed the observed differences in retaliation in their study to the time at which information was provided to participants, differences in anger associated with the number of provocations witnessed by participants may have accounted for differences in retaliation. Kremer and Stephens did not include a measure in their study to assess participants' perceived anger at the time of retaliation,

and subjects did not differ across conditions on measures of physiological arousal. Thus it is difficult to determine on the basis of this study whether mitigation affected reductions in participants' retaliation against the experimenter, or whether subjects were less angered by provocation and simply expressed less aggression.

While the preceding review provides evidence that cognitive factors occur between provocation and retaliation to affect the level of aggression, it does not reveal the process that underlies this effect. Studies designed to determine whether the differences in aggression associated with arbitrary and nonarbitrary provocation are due to differences in the motivation to aggress or an inhibition to retaliate have not contained conditions adequate to determine which of these two processes accounts for the observed decreases in aggression. In studies where inhibitory forces against retaliation have been manipulated, these conditions may have affected the development of the emotional response to provocation such that differences in the amount of retaliation were due to differences in level of anger. With the exceptions of Zillmann and Cantor (1976) and Kremer and Stephens (1983), the studies reviewed here did not attempt to measure the emotional response at the time of retaliation, and no experiment has attempted to measure subjects' perceived level of anger at time of retaliation. Consequently, an experiment is needed to

examine the correspondence between perceived level of anger and the amount of retaliation in order to assess the affect of attributionally relevant information on the motivation to aggress.

Moreover, the time at which attributionally relevant information is known to the provoked individual may affect instigation or inhibition. Zillmann and Cantor (1976) found that negative evaluation of an insulting experimenter and physiological arousal were lowest when subjects received mitigating circumstance information prior to provocation. The level of physiological arousal manifested by subjects who received mitigating circumstance information subsequent to provocation decreased relative to those who received no information concerning provocation; but there were no differences in aggression between these latter two conditions. Zillmann and Cantor's failure to find an effect of subsequently acquired mitigating circumstance information is surprising in light of findings by Kremer and Stephens (1983) and Mallick and McCandless (1966) that mitigating circumstance information provided subsequent to provocation reduced aggression relative to other conditions. Similarly, Zillmann et al. (1975) obtained evidence that knowledge of mitigating circumstance information provided to subjects after being provoked significantly reduced retaliation against a frustrator. While the results from these four studies are equivocal, it may be that the time at which

mitigating circumstance information is acquired affects its impact on subjects' attributions of intent, or their consideration of inhibitory factors against aggressing. For example, mitigating circumstance information provided prior to, or concomitantly with, provocation may have its primary effect on the development of the emotional response, while information acquired subsequent to provocation may have a greater effect on the appraisal of response appropriateness.

Further, the inconsistent results provided by Kremer and Stephens (1983), Zillmann and Cantor (1976), Mallick and McCandless (1966) and Zillmann et al. (1975) may be due partially to the fact that the latter two studies provided relatively strong excuses for the provoker's behavior, while the former two studies provided a more moderate excuse. Once the individual has been angered and aroused by provocation, his or her attention may be directed to an appraisal of response alternatives and the anticipation of sanctions for behaving aggressively. To the extent that individuals have been provided with a relatively strong excuse for provocation, reductions in aggression may be due primarily to the effect of this information on inhibition. In contrast, a somewhat weaker excuse may have less impact on the appraisal of response appropriateness. The available data do not address clearly whether inhibition or instigation is affected by mitigating circumstance information because investigators have not controlled for

the strength of the excuse for provocation provided to subjects in their studies.

Another factor that may account in part for the inconsistent findings of previous research is the relative lack of knowledge about factors that influence inhibition. Thus, while the majority of studies reviewed here employed public and private evaluation conditions in order to vary the sanctions for aggressing, other factors in these studies, such as the social status of the transgressor, may have influenced the extent to which inhibitory forces were operating in the different conditions. Hokanson and Shelter (1961), for instance, provided evidence that recovery from annoyance induced arousal was delayed for subjects who retaliated against a professor, relative to those who retaliated against a peer. Presumably, the higher social status of the transgressor, or the perceived inappropriateness of aggressing, induced anxiety in subjects which maintained sympathetic excitation (Geen & Quanty, 1977). It is instructive to note in this context that the social status of the transgressor has varied widely across the extant studies. For instance, Kremer and Stephens (1983), Zillmann et al. (1975) and Zillmann and Cantor (1976) employed an experimenter as the source of annoyance and the recipient of retaliation, while in one condition of the Burnstein and Worchel (1962) study the confederate posed as a handicapped individual. In contrast, a peer served as

the source of annoyance in the Mallick and McCandless (1966) and Rule et al. (1978) studies. Differences in the perceived appropriateness of aggressing against these individuals of differing roles and status may have altered the strength of sanctions for aggression, independent of whether retaliation was public or private.

In addition to interpretive problems induced by differences in the social status of the annoyer, the evidence concerning the effects of public and private retaliation on aggression is equivocal. Worchel, Arnold, and Harrison (1978) provided evidence that private retaliation may provide less incentive for aggression than public retaliation. In this study, subjects in private retaliation conditions, who were not accountable for their aggression, delivered less shock to an annoyer than subjects who believed that the annoyer knew their identity. Presumably, the public retaliation condition offered a greater opportunity for the debased individual to reassert the self and reestablish lost power. In contrast to these data, Zimbardo (1969) observed that anonymous females behaved more punitively toward a victim than their nonanonymous counterparts, while Donnerstein, Donnerstein, Simon, and Ditrichs (1972) found more aggression when subjects were assured anonymity, particularly when the annoyer appeared dangerous. Perhaps accounting for these differences, Baron (1973; 1974) demonstrated that a high likelihood of

retaliation by the target of aggression appears to curb aggression when incentives are low, but makes little difference when incentives are high. In light of this evidence, the presumed inhibiting or disinhibiting influence of public or private evaluation context cannot be viewed solely as a function of anonymity, but rather appears to depend more directly on other factors such as likelihood of reprisal or evaluation apprehension.

Two other methods have been employed to vary subject's apprehensions about aggressing. In one approach, Borden (1975) varied the perceived appropriateness of aggression by having subjects compete in an aggressive reaction time contest in the presence of either a proaggressive or antiaggressive observer. In a first study, males delivered significantly higher levels of shock to their opponent in the presence of a male than a female observer. In a second study, males behaved more aggressively in the presence of a proaggressive than antiaggressive observer, independently of whether the observer was male or female. Most significantly, removal of the proaggressive observer reduced aggressiveness while removal of the antiaggressive observer had no effect on aggression. Presumably, the presence of the proaggressive observer disinhibited aggression by reducing subjects' apprehension for retaliation against their opponent. In a second approach, Donnerstein and Donnerstein (1973) informed half their subjects that their responses were being recorded

on videotape for later use by the experimenter. The remaining subjects were given no information regarding taping. Results on a direct measure of aggression indicated that subjects under potential censure conditions delivered less aggression toward a target than did noncensure subjects. In a second experiment, noncensure subjects delivered a lower level of reward to a target than did subjects who believed that their responses were being videotaped. Apparently, subjects under potential censure conditions evidenced a greater degree of evaluation apprehension for negative behavior than no-censure subjects. In light of these findings and the inconsistent evidence concerning the effect on aggression of anonymous responding and evaluation context, in the present approach we suggest that the appraisal of sanctions or restraints for aggression depends more directly on the social contingencies of the evaluation context, than whether the evaluation is made publically or privately. Given the ambiguity concerning the strength of sanctions for aggression in past studies, the present research employed the social censure manipulation rather than the public-private evaluation context to attempt to clarify the effect on aggression of attributionally relevant information which is provided subsequent to provocation. In addition, it was felt that a more direct manipulation of the strength of inhibitory forces should

provide information about the role of inhibition.[1]

In addition to the foregoing considerations, dispositional differences engaged by provocation may influence the processing of attributionally relevant information. For instance, perceptual or perspective differences induced by the emotional state, or high levels of arousal, may affect the individual's attention and responsiveness to mitigating circumstance information, such that the relative impact of the information on retaliation may vary as a function of the time it becomes known during the provocation - retaliation sequence. Once the individual is in an emotional state, he or she may simply process information differently due to shifts in perception or motivation, and may be less responsive to mitigating circumstance information. Thus, as a result of prior provocation, mitigating circumstance information may be attenuated or be less relevant because of current information processing demands. To the extent that processing differences may be engaged as a result of being angered, they may be evidenced by differences in what is

---

1. While the direct observer procedure would appear to provide a more potent manipulation of evaluation apprehension than that associated with potential censure by tape recording, timing requirements in the present design precluded the use of an observer-participant. However, the results of Donnerstein and Donnerstein (1973) suggest that the effect of potential censure tends to parallel that of potential retaliation (Donnerstein & Donnerstein, 1972), and appears effective in reducing aggression.

remembered about the provoker and the provoking circumstances. As a secondary focus, the research attempted to examine processing differences as reflected in memory differences, by embedding the mitigating circumstance information within a broader context of information about situational circumstances.

In summary, the present research attempted to examine the effects on retaliation of the strength of mitigating circumstances for attack, the time at which this information is known, and the strength of anticipated sanctions for aggression in order to examine adequately the impact of the provision of attributionally relevant information on individuals' evaluations of provoking circumstances and their subsequent behavior. The critical issues of this research concern the extent to which information about the provoking circumstances affects the emotional response to provocation, or conversely, the inhibition of hostility, and whether the time at which information is provided affects the consideration of inhibitory factors against aggressing.

To address these issues, the present research employed a constant provocation treatment with two levels of the timing of mitigating circumstance information (prior-subsequent to provocation), two levels of mitigation for attack (weak-strong excuse), two levels of sanctions for aggression (high-low social censure), and a no anger control group. Instigation was assessed by a combination of

physiological measures and ratings of perceived annoyance. Retaliation was assessed by the level of aversive noise delivered to a frustrator employing a modified teacher-learner paradigm. An attempt was made to assess the weight attached by subjects to mitigating circumstance information through a combination of ratings and post experimental interviews.

A primary focus of the research was to assess whether mitigating circumstance information affects the emotional response to provocation, or conversely, the inhibition of retaliation. Consistent with an attributional explanation of aggressive behavior (Rule & Nesdale, 1976; Zillmann, 1979), it was anticipated that the emotional reaction to provocation and retaliation would be least intense when subjects received mitigating cirumstance information prior, rather than subsequent to, provocation. Further, given expectations that the receipt of mitigating circumstance information prior to provocation influences the development of the emotional response, emotional reactivity and retaliation should be more pronounced in low relative to high mitigation conditions. Thus, both emotional arousal and retaliation were expected to decrease with increases in the strength of mitigating circumstances. Consistent with these predictions, sanctions against aggression were not expected to affect the level of emotional arousal engendered by provocation for prior mitigation participants, and to

inhibit retaliation only under conditions of low mitigation.

Because mitigating circumstance information is expected to have its primary effects on the instigation to aggress, decreases in anger level and retaliation resulting from the subsequent provision of mitigating circumstance information are viewed as primarily due to differences in the strength of inhibitory factors. Thus, in contrast to prior mitigation subjects, subsequent mitigation participants are expected to exhibit high levels of emotional reactivity to provocation, but to reduce their retaliation only when anticipated sanctions against aggression are high. In contrast to these predictions, if mitigating circumstance information serves primarily to inhibit motivated hostile and aggressive responses, emotional arousal should not differ due to the time at which mitigating circumstance information is acquired, and retaliation will vary as a function of the strength of anticipated punishment.

The secondary focus of the research was to provide a preliminary assessment of whether processing differences are engaged as a result of provocation such that individuals may be less responsive to attributionally relevant information due to their emotional state. It was expected that processing differences due to provocation would be evidenced by less memory for attributionally relevant information by subsequent mitigation participants, than by prior mitigation subjects.

METHOD

Subjects and Design.

One hundred and eleven male introductory psychology students participated in the study in partial fulfillment of course requirements. Ten participants were randomly assigned to each of eight conditions of a 2 X 2 X 2 factorial design based upon two levels of the timing of mitigating circumstance information (prior-subsequent to provocation), two levels of mitigation for attack (weak-strong excuse), and two levels of sanctions for aggression (high-low social censure). A further 30 participants were randomly assigned to one of three conditions consisting of two no-anger conditions and one time-wait condition. These latter three conditions were included in the study design in order to assess whether arousal from sources other than insult may have become labeled as anger or have facilitated available responses, and to assess whether timing differences, introduced by presenting the speech prior or subsequent to anger may have affected differences in information processing.

Apparatus.

Each of two experimental rooms (1.98 m^2 and 2.29 m x 1.98 m) employed in the study was equipped with dummy video camera and microphone, one set of stereo earphones, physiological recording equipment necessary to record heart rate and blood pressure, and one custom designed "aggression

machine" (Buss, 1961). The aggression machine (25.5 cm X 20.5 cm) contained the following features: a) a column of three lights on the left side of the panel numbered from 1 to 3 that served to indicate the learner's responses; b) three lights in the center of the console labeled ready, give, and receive that signaled participant responses; and c) two rows of four switches labeled with the numerals 1 to 7, and the word, correct, that served ostensibly to deliver different levels of noise to the learner, or indicate a correct response. Each aggression console was controlled by a separate Aim 65 microcomputer (Rockwell International) that served to signal the onset of Experimental trials and learner responses by illumination of console lights according to a programmed sequence, and to record the level (from 1 to 7, or correct) and the duration to the nearest millisecond of participants' button press.

Heart rate was recorded by means of an optical plethysmograph attached to participants' finger and monitored by the Aim 65. Changes in blood volume were counted for 30 second intervals and converted to effective pulse per minute rates. Blood pressure was recorded from the upper arm with an automatic blood pressure cuff and microphone controlled by a Hewlitt Packard physiograph.

The auditory stimulation consisted of 9 bursts of 350 Hz squarewave noise recorded on magnetic tape. Each noise burst was presented to the right ear through high-fidelity

earphones at an intensity of 95dBA and duration of 500 milliseconds.

Procedure

Subjects were tested individually in an experiment purportedly designed to assess physiological responses to ongoing cognitive activity. Upon arrival at the laboratory, participants were escorted to separate experimental rooms. After ensuring that the participants were not acquainted, the experimenter explained briefly that the experiment was a pilot investigation intended to select appropriate experimental tasks and materials to be employed in a larger study of the effects of physiological arousal on ongoing cognitive activity. Participants were informed that because the major focus of the pilot work concerned physiological responses, their physiological reactions to a number of short tasks would be monitored continuously throughout the session. Participants were informed further that in addition to their physiological responses, they would be asked to report their internal feelings on a number of short rating scales as an aid to interpreting the physiological data.

Social Censure Manipulation. Following this brief introduction, the experimenter attached each participant to the physiological recording apparatus and activated the video cameras noting to the participant that the experimental session would be videotape recorded. Participants in low censure conditions were told that

recording was not related to the experiment, but only that the electronics technician required test tape in order to repair the video recorder. Participants in high censure conditions were informed that the experimental session was being recorded for subsequent viewing by the University of Alberta Human Subjects Ethics Committee as part of the process in gaining University approval for the main experiment. Thus for this latter group, it was certain that a high status group of individuals would later evaluate their behavior toward the co-worker, while the behavior of low censure participants would not be evaluated.

Subsequent to these procedures, participants listened to audiotaped instructions which explained the purpose of the study and instructed participants in their experimental roles (see Appendix A for transcript of instructions). Briefly, subjects heard a short description of selected social facilitation research suggesting that the influence of a co-worker on complex task performance may vary as a function of the co-worker's evaluative role, rather than as a function of his or her presence or absence. It was explained that the worker's apprehension regarding either positive or negative outcomes due to evaluation may be arousing, and if this were true, then the level of arousal experienced by the worker should influence performance of complex tasks in a predictable curvilinear fashion. Participants were told that before this hypothesis could be

tested, it would be necessary to determine the arousal values associated with different tasks and different modes of evaluation in order to create precise experimental conditions for the main study. Thus, to facilitate the selection of appropriate tasks and modes of evaluation, the present study was intended simply to explore different combinations of tasks and types of evaluations and to measure the arousal generated by these combinations. Participants were informed that in order to make the tasks arousing, they might be asked to both administer and receive aversive noise or electric shock during some of the tasks. It was explained that the shock and noise were not harmful or dangerous, but that participants might find them annoying or uncomfortable. Further, it was explained that although the tasks would not be dangerous or difficult, participants were free to choose not to participate in the experiment and still receive credit toward their course participation requirement. At this time, the experimenter met individually with each participant to answer questions and to obtain written consent from participants to continue with the experiment. The experimenter emphasized again that participants were free to choose to leave the experiment at this time and still receive participation credit.[2]

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2. Consistent with previous experiments conducted in our laboratory that have employed aversive noise or electric shock, no participant elected to leave the experiment.

Subsequent to these procedures, the experimenter returned to the control room and continued with the audiotaped instructions. Participants learned that they would serve alternately as worker and evaluator in a series of co-worker interaction tasks. For the first task, participants were instructed that Subject 1 would prepare a short solution to a social problem under conditions of noise and written evaluation by Subject 2, while Subject 2 would prepare a short speech and subsequently deliver his speech to Subject 1.[3] At this time the experimenter met with each participant to answer questions and to reiterate portions of the task instructions. The experimenter then distributed materials for the essay task (Appendix B) and instructed each participant that he had 5 minutes in which to write an essay on energy conservation.

Mitigating Circumstance Manipulation.

The experimenter returned to each participant's room after 5 minutes elapsed time to collect the essay and inform participants of the next task. Prior mitigation participants were instructed that Subject 2 would now give his speech. At this point, the experimenter provided the participant with a copy of the speech writing task instructions ostensibly used by Subject 2 to prepare his speech (Appendix C) so that

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3. Each participant in the experiment was instructed that he was Subject 1. Thus, although two subjects served in the experiment at one time, both participants were actually Subject 1.

Subject 1 "could follow along." Participants then listened to one of two standard speechs in which Subject 2 ostensibly provided information about his background, hobbies, university work, career plans, most interesting recent experience, and his worst recent experience.

Weak - Strong Mitigating Circumstance Manipulation.

Information provided in the speech under the worst recent experience topic constituted the weak - strong mitigating circumstance manipulation. Participants in the weak mitigating circumstance conditions heard Subject 2 describe himself as being upset about receiving a grade of 7 on an important chemistry midterm, when he is sure he should have received a grade of at least 8. Further, participants learned that while Subject 2 was worried that a low mark in the course might prevent him from entering medical school, that he was fairly certain that he would ultimatley receive a high mark in the course. In the strong mitigating circumstance conditions, participants heard Subject 2 describe himself as upset because this same low mark would prevent him from entering medical school and force him to change his career plan of assuming his father's general medical practice (see Appendix D for transcript of speeches). Participants in subsequent mitigation conditions did not hear the speech at this time, but rather, received the anger manipulation directly following the essay writing task.

Anger Phase.

Following either the essay writing task or the speech task, the experimenter returned to each participant's room to explain the essay evaluation procedure. Participants were reminded that because they were in the "critical" audience condition, their essay would be evaluated by both a written and noise evaluation. The noise evaluation would range from 0 to 10 noise blasts with higher numbers of noise blasts indicative of a poorer rating. The experimenter then returned to the control room and signaled the onset of the evaluation. Each participant received 9 bursts of 350 Hz squarewave noise delivered at an intensity of 95 dBA and duration of 500 milliseconds.[4] Subsequent to the noise evaluation, the experimenter entered the participants' room to deliver the standard written evaluation and returned immediately to the control room. The written evaluation (Appendix E) consisted of eight rating scales related to the form and content of the essay, traits of the writer, and one written comment. In anger conditions, participants received a standard evaluation designed to provide an unfavorable evaluation of their essay, and that described the participant as uncreative and probably a poor student. In contrast, participants in no anger conditions received a

4. This type of anger manipulation is similar to that employed in other studies of aggression (e.g., Berkowitz & Geen, 1966; Baron, 1974; Donnerstein & Wilson, 1975).

neutral evaluation of their essay and abilities. Further, no anger participants received only 4, rather than 9, noise blasts.

Subsequent Mitigation Conditions. Following the anger manipulation, Participants in subsequent mitigation conditions performed the speech task in which they listened to the audiotaped speech containing the weak - strong mitigating circumstance information. Thus, subsequent mitigation participants received the mitigating circumstance information after the anger manipulation, while participants in prior mitigation conditions received this information before the anger manipulation. With the exception of this difference in the presentation order of speech and anger, all procedures for the two groups were identical.

Retaliation Phase.

Upon completion of either the anger manipulation (prior speech conditions) or the speech task (subsequent speech conditions), participants listened to an audiotaped description of the teacher-learner task (Buss, 1961) in which Subject 2 would serve as the learner and Subject 1 would serve as teacher. Participants were instructed that Subject 2 would be given 3 minutes to study a list of paired nonsense syllables and then be tested on his knowledge in an automated test situation. Participants were instructed that their task was to monitor the responses of Subject 2 using the feedback lights on their console, and to evaluate

Subject 2 with the correct button for correct responses. However, if Subject 2's response was incorrect, participants were to deliver aversive noise to the learner, where button 1 represented a low level of noise and button 7 a loud level of noise. Participants were informed that because the measure of interest in this task was the impact of different levels of stressful stimuli on the learner's physiological responses and task performance, that any arbitrarily determined noise level could be delivered. Further, participants were informed that it really didn't matter to the experimenter which noise levels they selected as at least 100 individuals would be required to participate in the experiment in order to obtain a sufficient number of observations at each noise level.

Following these instructions, the experimenter entered the participant's room and handed him a list of 15 consonant-vowel-consonant nonsense syllables of medium M' value (Nobel, 1961) and a list of correct responses. At this time the experimenter answered participants' questions regarding the task and reiterated to participants that they were completely free to determine the level of noise that they would deliver to Subject 2 for incorrect responses. Further, it was explained that higher levels of noise were expected to interfere with the ability of Subject 2 to concentrate and perform well on the task, while lower levels of noise should interfere less with his ability to perform

the task. The experimenter then returned to the control room and signaled the onset of the learning task. Each participant then responded to 10 programmed learning trials that consisted of 8 incorrect and 2 correct responses. Thus, each participant was provided with eight opportunities to deliver noise to Subject 2.

Dependent Measures.

Heart rate and blood pressure readings were recorded at six different times over the course of the experimental session. The first measure constituted the base measure and occurred subsequent to the initial brief introduction and 1 minute after the beginning of the audiotaped instructions. Subsequent measures were obtained approximately 30 seconds after the termination of essay writing, speech listening (Mitigation), and essay evaluation (Anger); immediately prior to the opportunity to retaliate, and 1 minute subsequent to completion of the teacher-learner task. In addition to these measures, participants completed a 12 item arousal checklist (Appendix F) prior to essay writing, immediately subsequent to anger, and prior to retaliation. During the the teacher-learner task, both the intensity level and duration of participants' button presses were recorded for each trial. These latter measures constituted the behavorial measure of aggression.

Following completion of the experimental session, participants provided free recall measures of information

presented by Subject 2 during the speech task and responded to the post experiment questionnaire. The questionnaire (Appendix G) contained 42 7-point rating scales designed to assess the effectiveness of the experimental manipulations and participants' liking for Subject 2, as well as their perception of the causes for Subject 2's behavior and the extent to which he was held responsible for provocation.

Following completion of the post experiment questionnaire, the experimenter formally questioned each participant to learn whether they had viewed the mitigating circumstance information as providing a reason for Subject 2's behavior during the experiment, and whether they felt that their own behavior had been affected by the social censure manipulation. Finally, participants were probed for demand awareness and suspiciousness and thoroughly debriefed.

RESULTS

Data Analysis and Choice of Model.

Of the 111 males who participated in the experiment, one subject was excluded from the analysis for failure to complete the post experimental questionnaire. Due to the involved cover story, no participant expressed suspiciousness of the experimental hypotheses or procedures, and no subject declined to participate in the study. In general, the responses of the remaining 110 participants for each dependent measure were submitted to a 2^3 factorial analysis of variance. A fixed within subjects factor was incorporated in the model for variables that required repeated measurements. In addition, a number of planned a priori comparisons were performed on the data to examine specific hypotheses.

Concerning the choice of this model, it must be noted that participants were assumed to be functionally independent for purposes of the analysis. That is, although subjects participated in the experiment in groups of two, they were run individually and did not meet or interact in any way during the experiment. Thus the individual participant was conceptualized as the most appropriate unit of analysis for the experiment in contrast to a dyad reflecting group membership or pairing. Selection of the latter unit of analysis would have required that a nested grouping factor be included as a term in the model. However,

choice of this model was viewed as inappropriate given that variation associated with participant pairings was not related to the hypotheses under investigation, nor was variation attributable to this source expected to contribute significantly to the total variation in responses. To test this latter assumption, 81 dependent measures were submitted to a 2 X 2 X 2 X (40) analysis of variance with mitigation, timing, and censure assigned between subjects and experimental pairings nested within these conditions. Results of these analyses revealed only four significant outcomes associated with the nested group factor, $F(32,40)$, $ps < .05$. The chance level of this outcome (rel f = 4/81, $p = .0493$) affirmed the choice of the completely randomized factorial model, and as a consequence, all analyses are reported without respect to experimental pairings.

Effect of Manipulations.

Anger.

In order to assess the effectiveness of the anger manipulation, participants were asked to rate the extent to which they perceived the evaluation of their essays to be fair and justified, and to indicate how angry they felt during the essay task. Orthogonal contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger control conditions revealed that angered, relative to nonangered participants reported that their essay evaluation was significantly less fair, $t(99) = -4.98$,

$p < .001$, Ms = 3.0 vs. 5.1, and less justified, $t(99) = -4.65$, $p < .001$, Ms = 3.12 vs. 4.75. Further, angered participants reported that they felt significantly more angry during the essay evaluation task than did nonangered participants, $t(17.5) = 3.451$, $p < .003$, Ms = 3.10 vs. 1.85.

In addition to these measures, participants responded to the arousal rating scale immediately subsequent to the anger manipulation. Orthogonal contrasts revealed that angered, relative to nonangered participants, rated themselves as significantly more aroused, $t(99) = 2.83$, $p < .005$, Ms = 4.3 vs. 3.5, more excited, $t(99) = 2.59$, $p < .011$, Ms = 3.99 vs. 3.15, and significantly more annoyed, $t(99) = 5.98$, $p < .001$, Ms = 4.30 vs. 2.05. Further, analysis of heart rate data as measured in differences from base level, revealed that participants in anger conditions exhibited significantly greater increases in arousal immediately subsequent to the anger manipulation, ($M = 11.8$), than those in nonangered conditions ($M = 2.1$), $t(57.4) = 10.78$, $p < .001$; although there were no differences in the arousal level of the two groups immediately prior to anger, $t(99) = 1.55$, $p < .124$, Ms = -1.5 vs. 1.4.[5] Finally, although angered, relative to

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5. All analyses involving repeated measures are reported as differences from base level. The respective mean heart rates for the nonanger and anger groups were 76.6 and 74.9 before anger, and 74.8 and 85.3 after anger.

nonangered participants exhibited greater increases in systolic (Ms = 8.00 vs. 5.00) and diastolic (Ms = 5.70 vs. 5.00) blood pressure immediately subsequent to anger, these differences were not reliable, t(45), ps > .05. Taken together, these analyses indicate that the anger manipulation was successful in affecting feelings of anger and annoyance in angered participants, together with concomitant increases in heart rate and self attributions of arousal.

Mitigating Circumstance Information.

The mitigating circumstance manipulation was intended to affect participants' perceptions of the co-workers' motives and intentions for provocation by providing subjects with either a justifiable or unjustifiable reason for the co-workers' negative evaluation of their essay. In order to assess the effectiveness of this manipulation, responses of high and low mitigation participants were compared on the two items, "fairness of essay evaluation", and "justification for essay rating". In addition, participants were asked to respond to two items during formal questioning concerning the emotional state of the co-worker and whether they had viewed the mitigating circumstance information as providing a reasonable excuse for the co-worker's behavior.

Employing anger conditions only, orthogonal contrasts conducted on the average of the four low mitigation groups vs. the average of the five high mitigation groups revealed

that low mitigation participants perceived their evaluation to be only slightly less fair than high mitigation participants $t(81) = -1.53$, $p < .10$, $Ms = 2.77$ vs. 3.26. In contrast to the fairness rating, participants were significantly differentiated in their ratings of how justified they perceived their evaluation to be, such that low, relative to high mitigation participants rated their essay evaluation as significantly less justified $t(81) = -2.17$, $p < .025$, $Ms = 2.75$ vs. 3.42. In addition, those in prior speech conditions viewed their evaluation to be more justified than those in subsequent speech conditions, $t(72) = 1.65$, $p < .05$, $Ms = 3.38$ vs. 2.82. Further, analysis of formal questioning items revealed that a smaller proportion of those in low, relative to high mitigation conditions perceived the co-worker to be emotionally upset (46% vs. 81%), $t(32) = -3.69$, $p < .001$; while no participant in low mitigation conditions felt that the co-worker's circumstances or emotional state provided a reasonable excuse for his behavior. In contrast, 69% of those in high mitigation conditions felt that the co-worker's circumstances and emotional state provided a reasonable excuse for his behavior. Thus the two groups differed significantly in their perceptions of whether there were mitigating circumstances surrounding the co-worker's negative behavior, $t(32) = -5.08$, $p < .001$. Taken together, these analyses indicate that the mitigating circumstance manipulation had the intended effect of differentiating

participants with respect to the perceived reasonableness of insult, such that high, relative to low mitigation participants perceived the co-worker's behavior to be more justified and more excusable.

Social Censure Manipulation.

The social censure manipulation was intended to affect participants' perceptions of inhibitions for aggression such that those in high censure conditions would feel a greater degree of evaluation apprehension for negative behavior than those in low censure conditions. To assess this effect, several items were included in the post experimental questionnaire that were designed to measure participants' feelings of apprehension and freedom regarding noise delivery to the co-worker. In addition, participants were asked during formal questioning whether videotape recording of the experimental session had affected their behavior during the teaching task.

Results of orthogonal contrasts employing the average of the five low-censure conditions vs. the average of the six high censure conditions failed to reveal differences between the two groups in their ratings of the appropriateness of delivering noise to the co-worker, or in how apprehensive or guilty they felt about delivering noise to the co worker, $t(99)$, $ps > .05$. In contrast, analysis of participants' rating of how free they felt to deliver noise and how relaxed they felt during the teaching task, revealed

that those in high, relative to low censure conditions, reported feeling both less free to deliver noise, $t(99) = -2.14$, $p < .025$, $Ms = 4.02$ vs. 4.72, and less relaxed, $t(99) = -2.36$, $p < .01$, $Ms = 3.78$ vs. 4.44. Finally, although approximately one half of the participants reported that they had forgotten about the videotaping by the end of the experimental session, analysis of the formal question item revealed that a significantly greater proportion of those in high censure conditions (46%) reported that the camera had affected their behavior during the teaching task than in low censure conditions (0%), $t(35) = 6.01$, $p < .001$. Those respondents who did indicate that videotape recording had affected their behavior, reported, in general, feeling somewhat uneasy during the experimental session and that they had monitored their behavior during the experimental session (e.g., "I tried to sit very still" or "I combed my hair before you turned on the camera"). Thus, although there was no direct evidence to indicate that the censure groups differed in their ratings of apprehension for aggression, findings that high relative to low censure participants felt less free to chose the noise level delivered to the co-worker, and less relaxed during the teaching task, suggest that these subjects were more inhibited from expressing aggression as intended.

Major Dependent Measures

Physiological Arousal.

Heart rate measures were recorded from each participant at six different times throughout the experiment, and six blood pressure readings were obtained from one half of the participants in each condition. Due to the timing manipulation, two of these measures, Speech (t3) and Anger (t4) were confounded within speech order but assumed to be conceptually equivalent with respect to the hypotheses. The remaining four measurements for each index were recorded at identical times for all participants. To control for initial differences in arousal, measures t2 through t6 were converted to change scores relative to base level (t1). Each measure was analysed employing a mixed model analysis of variance with timing, mitigation, and censure assigned between subjects and the five repeated measurement trials within subjects. Results involving within subjects factors were conservatively corrected employing the epsilon correction (Wilson, 1975).

Heart Rate.

Analysis of variance of heart rate change scores revealed significant main effects for speech order, $F(1,72) = 8.19$, $p < .006$, mitigation $F(1,72) = 4.97$, $p < .019$, and trials, $F(4,236.3) = 37.28$, $p < .001$; a significant 3-way interaction among speech order, mitigation, and censure, $F(1,72) = 4.38$, $p < .04$; together

with a significant 4-way interaction among speech order, mitigation, censure and trials, $F(3.4,246.3) = 3.27$, $p < .021$ (see Appendix H.1). Planned contrasts conducted on the trial means (Ms = 1.34, 1.75, 11.75, 4.01, 3.70) revealed that heart rate was significantly more elevated immediately subsequent to anger than in other trials, $t(246) = 11.74$, $p < .001$. Although heart rate declined subsequent to anger, a planned contrast conducted on the average of the two pre-anger trials and the two post-anger trials revealed that heart rate remained significantly more elevated relative to base level following anger, $t(246) = 3.13$, $p < .001$.

Inspection of the means for the speech order main effect revealed that participants who learned of mitigation prior to insult were significantly less aroused on average, than those who learned of mitigation subsequent to being insulted, Ms = 2.815 vs. 6.205. Further, those in high mitigating circumstance conditions exhibited significantly less change in heart rate than did low mitigation participants, Ms = 3.19 vs. 5.85.

Neither the main effect of censure nor any 2-way interaction approached conventional levels of significance. Examination of the significant 3-way interaction among speech order, mitigation, and censure (Table 1) revealed that high mitigation participants were less aroused by provocation when information was known prior, rather than

TABLE 1

Mean Heart Rate Change Scores as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	6.58[2]	3.20[1]	4.46[1]	9.08[2]
High Mitigation	1.48[1]	0.00[12]	7.34[2]	3.94[1]

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

subsequent to anger, and that the difference in arousal between low and high mitigation conditions was greater under low than high censure in prior speech conditions, whereas the difference between high and low mitigation was greater in the high rather than low censure conditions under subsequent speech conditons. Results of a Duncan's Multiple Range Test revealed that under low censure conditions, heart rate was significantly less elevated in high relative to low mitigation conditions when information was known prior to provocation, Ms = 1.48 vs. 6.58. Thus consistent with hypotheses, a strong excuse known prior to provocation tended to ameliorate participants' physiological reactions to provocation. This interpretation is qualified however, by the finding that subjects in subsequent information

conditions exhibited less arousal when mitigation and censure were high relative to their low censure counterparts, Ms = 3.94 vs. 9.08. Thus there was evidence to indicate that the effect of strong mitigation on physiological reactions to provocation may be independent of the time at which information is known when inhibitory factors for aggression are high.

The significant speech order X mitigation X censure X trials interaction was accounted for by the finding that changes in heart rate were relatively undifferentiated among groups prior to anger, but exhibited significant differences as a function of experimental conditions subsequent to anger. In order to assess the differences among groups for these data, the heart rate change scores as a function of speech order, mitigation, and censure were examined separately by trial immediately subsequent to anger (t3), immediately prior to the opportunity to retaliate (t4), and for the final measure obtained subsequent to retaliation (t5). Examination of the means for the anger trial (Table 2) revealed a pattern of findings similar to that of Table 1. Participants in high, relative to low mitigation conditions exhibited less arousal to provocation when information was known prior to provocation, and the difference in arousal between low and high mitigation for prior and subsequent participants was greater in low, than in high censure conditions. The results of a Duncan's Multiple Range Test

TABLE 2

Mean Heart Rate Change Scores Immediately Subsequent to Anger as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	15.4[2]	9.4[12]	10.9[12]	14.5[2]
High Mitigation	7.8[1]	7.4[1]	15.4[2]	13.2[12]

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

revealed that participants in high relative to low mitigation conditions, were significantly less aroused by provocation only when information was known prior to provocation. Consistent with this finding, high mitigation participants under prior speech conditions exhibited significantly less arousal to provocation than their subsequent speech counterparts, who had not yet learned of mitigation. Although Table 2 suggests a tendency for prior speech subjects to exhibit less arousal under high, relative to low censure conditions when mitigation was low, the means for these groups were not reliably different, Ms = 9.40 vs. 15.4. Thus consistent with hypotheses, there was evidence to indicate that strong mitigating circumstance information known prior to provocation tended to reduce participants

initial physiological reactions to insult.

Trial 4, recorded immediately prior to the opportunity to to retaliate, represents the effect of mitigation for participants who learned of mitigation subsequent to anger. Inspection of the means shown in Table 3 revealed that the average heart rate for all groups declined from the higher

TABLE 3

Mean Heart Rate Change Scores Immediately Prior to Retaliation as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	7.4^{3}	3.0^{123}	4.5^{123}	8.6^{3}
High Mitigation	3.1^{123}	-0.7^{1}	5.6^{12}	0.6^{12}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

levels recorded immediately subsequent to the anger trial. Examination of these data by a Duncan's Multiple Range Test revealed that in prior speech conditions, the arousal level of participants under combined low censure and low mitigation conditions remained significantly more elevated than the arousal level of those in high censure and high mitigation conditions whose arousal had returned to base

level. Of greater interest for these data was the finding that subsequent speech participants under high censure and high mitigation conditions exhibited the greatest decline in arousal between trial t3 and t4. For these subjects, heart rate had returned to base level, while the arousal level of those in other subsequent speech conditions remained significantly more elevated.

Finally, examination of the means for trial t5 recorded subsequent to retaliation (Table 4), revealed that with the exception of subsequent speech participants in combined high

TABLE 4

Mean Heart Rate Change Scores Subsequent to Retaliation as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	6.3^{23}	1.4^{12}	2.1^{123}	13.3^{4}
High Mitigation	-1.0^{1}	-4.0^{1}	8.3^{34}	-0.4^{1}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

mitigation and low censure conditions, the arousal levels of participants in high mitigation conditions had returned to base levels, while the arousal level of low mitigation

subjects remained generally elevated. Further, under subsequent speech conditions, the arousal level of those under combined low censure and high mitigation remained significantly more elevated relative to their high censure counterparts whose arousal remained at base level. Thus in addition to the finding that mitigation known prior to anger appeared to reduce the emotional reaction to provocation, there was evidence to indicate that attributionally relevant information provided subsequent to anger may reduce or modify emotional arousal when inhibitory factors against aggression are high. However, when restraints were low, mitigation provided subsequent to provocation had no affect on arousal.

Blood Pressure.

Planned contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger conditions revealed only that participants in anger conditions exhibited significantly higher systolic blood pressure immediately subsequent to anger than did those in no-anger conditions, $t(45) = 2.357$, $p < .02$, $Ms = 134.64$ vs. 130.38. Diastolic pressure did not differ reliably as a function of anger. While the patterns of systolic blood pressure means were similar in many instances to those observed for the heart rate data, a repeated measures analysis of variance of difference measures from base level revealed only a significant main effect of the trials

factor, $F(4,132) = 15.351$, $p < .001$. Inspection of the means by a Duncan's Multiple Range Test (Ms = 1.58, 4.88, 7.20, 4.20, 0.98), revealed that both the speech and anger phases of the experiment, irrespective of speech order, tended to facilitate increases in blood pressure, $p < .05$. Thus in contrast to heart rate, which was sensitive primarily to the anger manipulation, blood pressure appeared to be confounded with arousal due to task performance. No other reliable differences were observed.

Self-Attributions of Arousal.

Participants responded to the 12-item arousal rating scale prior to speech writing (t1), immediately subsequent to anger (t2), and immediately prior to retaliation (t3). Analysis of variance of difference scores relative to scale 1 for the item, "aroused", revealed only an effect for the trials factor that approached significance, $F(1,72) = 3.20$, $p < .078$, suggesting that participants were somewhat more aroused immediately subsequent to anger than at the time of retaliation, Ms = 1.08 vs. 0.85.

The analysis of variance conducted on participants' self reports of how excited they felt, revealed a significant main effect of speech order, $F(1,72) = 7.58$, $p < .007$, and a significant censure X trials interaction, $F(1,72) = 4.356$, $p < .04$ (see Appendix H.2). Inspection of the means for the speech order effect revealed that participants who learned of mitigation prior to being

insulted rated themselves as significantly less excited on average, than those who learned of mitigation subsequent to being insulted, Ms = 0.20 vs. 0.98. Further, analysis of the censure X trials interaction by a Duncan's Multiple Range Test, revealed that participants under low censure conditions reported that they were more excited immediately subsequent to anger than did participants in the remaining conditions, Ms = 0.88 vs. 0.45, 0.45, 0.58, $p < .05$. In a similar fashion, analysis of variance of participants' reports of how energetic they felt, revealed that subjects in low censure conditions viewed themselves as significantly more energetic immediately subsequent to anger than did participants in high censure conditions $F(1,72) = 5.76$, $p < .019$, Ms = 0.775 vs. 0.225, 0.500, 0.525 ($p < .05$ by a Duncan's Multiple Range Test).

Finally, analysis of variance of participants' self reports of annoyance revealed significant main effects for censure, $F(1,72) = 4.935$, $p < .029$, and trials, $F(1,72) = 64.3$, $p < .001$, and a significant 4-way interaction among speech order, mitigation, censure and trials, $F(1,72) = 4.84$, $p < .031$ (see Appendix H.3). Inspection of the means for the main effects revealed that participants in low censure conditions rated themselves as significantly more annoyed on average than did those in high censure conditions, Ms = 2.04 vs. 1.37, while all participants reported the greatest annoyance immediately

subsequent to anger, Ms = 2.41 vs. 1.00.

The significant 4-way interaction among speech order, mitigation, censure, and trials was examined seperately for the anger (t2 - t1) and retaliation trials (t3 - t1). Examination of the data for the anger trial (Table 5) revealed that prior speech participants reported less

TABLE 5

Mean Annoyance Difference Scores Immediately Subsequent to Anger as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	3.5^{6}	1.5^{1}	2.5^{34}	2.9^{45}
High Mitigation	1.8^{123}	1.7^{12}	3.0^{45}	2.4^{234}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

annoyance to provocation in high, relative to low mitigation conditions, whereas subsequent speech participants did not differ substantially in their ratings of annoyance as a function of mitigation or censure. A Duncan's Multiple Range Test revealed that participants in prior, relative to subsequent speech conditions, were significantly less annoyed by provocation immediately subsequent to anger when

mitigation was high. Further, high relative to low censure was effective in reducing annoyance in low mitigation participants who had learned of mitigation prior to insult. In contrast to these findings, participants did not differ in their annoyance as a function of experimental conditions when they had not yet learned of mitigation surrounding the insult. However, examination of the data immediately prior to retaliation (Table 6) revealed that while all

TABLE 6

Mean Annoyance Difference Scores Immediately Prior to Retaliation as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	1.6^{3}	0.6^{12}	1.4^{3}	1.1^{23}
High Mitigation	1.0^{123}	0.4^{12}	1.6^{3}	0.3^{1}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

participants exhibited reduced annoyance relative to the anger trial, subsequent speech subjects in combined high censure and high mitigation conditions exhibited significantly less annoyance once they had learned of mitigation, than did participants in other subsequent speech

conditions. Thus consistent with the heart rate data, there was evidence to indicate that participants viewed themselves as less aroused and less annoyed when strong mitigation was known prior to insult, but reported reduced arousal and annoyance under subsequent speech conditions once mitigating circumstances were known and censure was high.

Further to these data, items were included in the post experimental questionnaire that asked participants to attribute their arousal to the experimental tasks and co-worker, and to rate their feelings both during the evaluation and essay tasks. For the essay evaluation task, planned contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger control conditions revealed that while the two groups did not differ in their ratings of the extent to which they attributed arousal to essay writing or to the general situation, $\underline{t}(99)$, $\underline{p}$s $> .05$, participants attributed a greater degree of their arousal to the co-worker when they were angered rather than not angered, $\underline{t}(99) = 2.906$, $\underline{p} < .005$, $\underline{M}$s = 4.89 vs. 3.75. For angered subjects, however, planned contrasts revealed only an effect of mitigation that approached significance when censure was low, $\underline{t}(99) = -1.57$, $\underline{p} < .10$, suggesting that there was a tendency for high mitigation participants to attribute less arousal to the co-worker than their low mitigation counterparts under low censure conditions, $\underline{M}$s = 4.65 vs. 5.45.

With respect to participants' attributions of arousal during retaliation, angered participants attributed only somewhat more arousal to the co-worker than their nonangered counterparts, $t(99) = 1.43$, $p < .10$, $Ms = 4.00$ vs. 3.45, while planned contrasts conducted on the responses of angered subjects, revealed only that those in high, relative to low mitigation conditions, attributed significantly less arousal to the co-worker when censure was low, $t(99) = -1.95$, $p < .05$, $Ms = 3.65$ vs. 4.60. Thus, while the evidence was not strong that attributions of arousal to the co-worker differed significantly by conditions, participants in high mitigation conditions exhibited a tendency to attribute less arousal to the co-worker when mitigation was strong and censure was low.

Finally, in contrast to participants' concurrent reports of annoyance, post-hoc ratings of anger by angered participants revealed only that low, relative to high censure subjects, attributed significantly greater anger to themselves during the evaluation task, $F(1,72) = 23.112$, $p < .006$, $Ms = 3.7$ vs. 2.6 (Appendix H.4), while at the time of retaliation, those in combined low censure and low mitigation conditions expressed somewhat more anger than those in other censure and mitigation conditions ($p < .10$ by a Duncan's Multiple Test), $Ms = 2.8$ vs. 1.9, 2.1, 2.2. No differences were observed among experimental conditions in angered participants' ratings of their frustration, nor in

how upset they felt either during the evaluation or teacher-learner tasks, although those in prior, relative to subsequent speech conditions rated their essay evaluation as significantly less justified, $t(72) = -1.65$, $p < .05$, $Ms = 2.82$ vs. 3.38. Further to these findings, nonangered, relative to angered participants, reported feeling significantly less frustrated, $t(99) = -2.27$, $p < .025$, $Ms = 1.70$ vs. 2.46, less upset $t(99) = -2.12$, $p < .025$, $Ms = 1.55$ vs. 2.14, and less angry, $t(99) = -2.671$, $p < .005$, $Ms = 1.30$ vs. 2.16, during the teaching task.

Retaliation.

The mean noise intensity and mean duration of noise delivered to the co-worker over the eight error trials of the teaching task constituted the behavorial measures of aggression. Although no differences were observed among experimental conditions for the duration measure, planned contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger control conditions revealed that provoked, relative to unprovoked participants, delivered significantly more noise to the co-worker, $t(99) = 1.877$, $p < .05$, $Ms = 4.42$ vs. 4.02. Analysis of variance conducted on the noise intensity measure for angered participants revealed a significant main effect of mitigation, $F(1,72) = 4.149$, $p < .045$; a significant 2-way interaction between speech order and mitigation, $F(1,72) = 7.944$, $p < .006$; and a significant

3-way interaction among speech order, mitigation, and censure, $F(1,72) = 6.609$, $p < .012$ (see Appendix H.5).

The main effect for mitigation revealed that participants who learned of a low excuse for provocation delivered significantly more noise to the co-worker on average, than participants in strong excuse conditions Ms = 4.65 vs. 4.24. Examination of the means for the significant speech order by mitigation interaction by a Duncan's Multiple Range Test, revealed that participants who learned of a strong excuse prior to provocation, delivered significantly less noise to the co-worker than did their low mitigation counterparts and those who learned of mitigation subsequent to provocation ($p < .05$; Ms = 3.83 vs. 4.80, 4.49, 4.64).

Examination of the significant 3-way interaction among speech order, mitigation, and censure (Table 7) revealed that high mitigation decreased retaliation against the co-worker in prior relative to subsequent speech conditions, and that the difference in retaliation between low and high mitigation was greater under high, rather than low censure when information was known prior to provocation. Results of a Duncan's Multiple Range Test revealed that prior speech participants who retaliated under combined high censure and high mitigation delivered significantly less noise to the co-worker than did their low mitigation counterparts. Thus for prior information participants, high mitigation appeared

TABLE 7

Mean Noise level Delivered to Co-worker as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	4.41^{123}	5.20^{3}	4.54^{23}	4.44^{123}
High Mitigation	4.09^{12}	3.56^{1}	4.32^{123}	4.97^{23}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

to be effective in reducing retaliation, and this effect was enhanced when restraints against aggression were high.

In contrast to these data, participants who learned of mitigation subsequent to provocation did not differ in their retaliation against the co-worker as a function of either mitigation or censure. Of most interest was the finding that participants in combined high mitigation and high censure conditions, who learned of mitigation prior to provocation, delivered significantly less noise to the co-worker than those under similar conditions who learned of mitigation subsequent to provocation, Ms = 3.56 vs. 4.97. Thus, although analyses of physiological and self report measures suggested that combined high mitigation and high censure appeared to affect decreases in the physiological and

emotional reactivity to provocation of participants who learned of mitigation subsequent to retaliation, this effect was not apparent in the retaliation data. Combined strong mitigation and high censure tended to decrease the amount of noise delivered to the co-worker, but only when information was known prior to provocation.

In addition to the noise delivery measures, items were included in the post experimental questionnaire that provided participants with an opportunity to evaluate the co-worker along a number of dimensions. Planned contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger control conditions, revealed that provoked, relative to unprovoked participants, rated the co-worker as ruder, $t(99) = 6.596$, $p < .001$, $Ms = 4.80$ vs. 2.55; less competent, $t(99) = -3.265$, $p < .001$, $Ms = 3.04$ vs. 4.05; and more unlikable, $t(99) = 5.42$, $p < .001$, $Ms = 4.32$ vs. 2.80. Further, provoked relative to unprovoked participants rated the co-worker as being less friendly $t(99) = -4.571$, $p < .001$, $Ms = 2.81$ vs. 4.19, and reported that they would be less willing to work with the co-worker on another occasion, $t(99) = -2.367$, $p < .01$, $Ms = 3.67$ vs. 4.50.

Analysis of variance of these measures for angered participants revealed a significant mitigation by censure interaction for the item, "polite - rude", $F(1,72) = 4.410$, $p < .039$, and significant main effects for speech order

$F(1,72) = 6.618$, $p < .012$, and mitigation $F(1,72) = 3.87$, $p < .053$, on the willingness to work with on another occasion measure (see Appendix H.6 and H.7). Examination of the means for these analyses revealed that those in combined low censure and low mitigation conditions viewed the co-worker as more rude by a Duncan's Multiple Test than did participants in other conditions, $p < .053$, Ms = 5.3 vs 4.3, 4.5, 4.9. Inspection of the means for the willingness to work with again measure revealed that, contrary to predictions, those in prior speech conditions reported less willingness to work with the co-worker in the future than expressed by subsequent speech participants, Ms = 3.275 vs. 4.125; while high relative to low mitigation participants, reported a greater willingness to work with the co-worker on another occasion, Ms = 4.02 vs. 3.38. Examination of the means for these data by a Duncan's Multiple Range Test revealed that prior speech participants under combined low mitigation and low censure conditions expressed significantly less willingness to work again with the co-worker relative to subsequent speech participants under high censure conditions, (Ms = 2.7 vs. 4.3, 4.8; $p < .05$). However, no clear interpretation of this difference is suggested by other findings.

Finally, although angered and nonangered participants did not differ in their average ratings of the co-worker's motivation during the teaching task, analysis of variance of

these ratings for angered subjects revealed main effects for speech order, $F(1,72) = 9.06$, $p < .004$, and mitigation, $F(1,72) = 3.262$, $p < .075$, and a significant 3-way interaction among speech order, mitigation, and censure, $F(1,72) = 4.027$, $p < .049$ (Appendix H.8). Inspection of the main effects revealed that prior speech participants rated the co-worker as more motivated than those in subsequent speech conditions, Ms = 3.85 vs. 3.10; while high relative to low mitigation participants, viewed the co-worker as more motivated, Ms = 3.70 vs. 3.25 . Finally, examination of the 3-way interaction shown in Table 8 revealed that high mitigation increased ratings of the co-worker's motivation in prior, relative to subsequent speech conditions, and that the difference in rated motivation between low and high mitigation was greater under high rather than low censure when information was known prior to provocation, whereas the difference between low and high mitigation was greater under low than high censure in subsequent speech conditions. A Duncan's Multiple Range test revealed that participants in combined high mitigation and high censure conditions, who learned of mitigation prior to insult, rated the co-worker as more motivated than did participants in other conditions. Taken together, analyses of retaliation data provide evidence consistent with hypotheses that strong mitigating circumstance information known prior to provocation tended to reduce negative evaluations of the co-worker by provoked participants. This effect was enhanced for prior speech

TABLE 8

Mean Ratings of Co-worker's Motiviation as a Function of Speech Presentation Order, Social Censure and Mitigation.

	Prior Speech		Subsequent Speech	
Censure:	Low	High	Low	High
Low Mitigation	3.8^{12}	3.2^{1}	2.9^{1}	3.1^{1}
High Mitigation	3.8^{12}	4.6^{2}	3.4^{1}	3.0^{1}

Note: Means sharing no superscripts in common differ significantly at the .05 level of significance by a Duncan's Multiple Range Test.

participants when restraints against aggression were high. In contrast, attributionally relevant information failed to exert an influence on the retaliation and evaluations of participants who learned of mitigation subsequent to provocation.

Free Recall for Speech.

Subsequent to the retaliation phase of the experiment, participants provided free recall measures of information presented by the co-worker during the speech task. Each participant was asked to list all details that he could remember from the co-worker's speech under the assumption that different levels of arousal might affect memory differentially. The recall protocols were scored according to the number of details remembered correctly in each of the

five speech topic categories. Frequency counts were combined to form three measures consisting of general memory, memory for mitigating information, and a combined total memory score for all categories. Possible total scores for the categories were 15 for general memory, 5 for mitigating circumstance information, and 20 for the composite total memory score.

Planned contrasts conducted on the average of the nine anger conditions vs. the average of the two no-anger controls for each of the memory measures, failed to reveal memory differences as a function of emotional anger, $t(99)$, $ps > .30$. Thus, on average, provoked participants were no more or no less likely to remember significant details of the co-worker's speech than were unprovoked participants. Within angered subjects, memory differences did emerge as a function of speech order for both the general and total memory scores, while a marginal difference was observed on the mitigating information measure as a function of strength of mitigation. Analysis of variance of the general information measure revealed that prior speech participants recalled significantly more details of the co-worker's speech than those in subsequent speech conditions, $F(1,72) = 5.566$, $p < .021$, $Ms = 9.80$ vs. 8.55. Related to this finding, prior, relative to subsequent speech participants, recalled a greater number of details on the total memory measure, $F(1,72) = 4.259$, $p < .043$, $Ms = 12.48$

vs. 11.05 . Finally, while there was a tendency for high relative to low mitigation participants to recall more details of the mitigating circumstance information (*Ms* = 2.75 vs. 2.42) this difference was not reliable, $F(1,72) = 1.596$, $p < .211$. Taken together, these analyses indicate that memory was affected by speech presentation order such that recall for general information was better when participants heard the speech prior rather than subsequent to being angered. However, this effect did not emerge for recall of mitigating circumstance information, suggesting that information concerning mitigation was equally represented among experimental conditions at the time of retaliation.

Correlations Among Measures.

In order to examine further the relationship between arousal and retaliaton, correlational analyses were conducted within and across experimental conditions to assess the extent of association among heart rate, self-reported annoyance, and retaliation. Results of correlational analysis within each angered condition revealed low to moderate nonsignificant negative associations between heart rate difference measures at the time of retaliation and the noise delivery measure (*rs* = -.05 to -.58, *ps* > .05), reflecting only that, in general, participants' heart rates had declined by the time of retaliation. In contrast, annoyance difference measures at

the time of retaliation exhibited low to moderate positive associations with noise delivery (rs = .00 to .64, ps >.05), suggesting that within the majority of conditions greater annoyance to harm tended to be associated with greater retaliation. However, no reliable pattern of associations between these measures and retaliation emerged as a function of experimental conditions. Consistent with these findings the correlation between heart rate difference measures at time of retaliation and noise delivery for all conditions combined was -.07, while the correlation between self-reported annoyance and noise delivery was .17. Graphical analysis of the respective bivariate relationships revealed that large individual variability contributed to these low associations. Thus while experimental treatments affected differences in group means, individual participants were influenced differentially by manipulations. No further analyses were conducted.

DISCUSSION

The present research attempted to examine the impact of the provision of attributionally relevant information on an individual's evaluations of provoking circumstances and on his subsequent behavior. Of specific interest in the investigation was the question of whether the provision of mitigating circumstance information affects the emotional response to provocation, or conversely the inhibition of retaliation. Consistent with predictions derived from an attributional explanation of aggression, a strong excuse provided prior to provocation reduced participants' physiological and emotional reactions to a subsequent insult. Physiological data and self-report measures revealed that participants who learned of mitigating circumstance information prior to being insulted by a co-worker exhibited smaller increases in physiological arousal and reported less annoyance immediately subsequent to provocation than did those who learned of mitigation after being insulted. Further, retaliation data supported predictions that strong mitigating circumstance information known prior to provocation will reduce retaliation to the harm-doer. Participants in the present investigation evaluated their provoker more favorably and retaliated less when they learned of mitigation prior, rather than subsequent to being insulted. In contrast, attributionally relevant information concerning the provoking circumstances failed to influence

the evaluations and retaliation of participants who learned of mitigation subsequent to being provoked. Taken together, these results support the fundamental propositions of an attributional model of aggression that assumes (a) attributionally relevant information that is known at the time of provocation affects the development of the emotional response to harm, and (b) that the level of anger engendered by provocation will be related to the amount of retaliation.

In addition to evidence that attributionally relevant information affects the emotional response when known prior to provocation, the present data indicated that mitigating circumstance information may effectively reduce or modify emotional arousal when it becomes known after the provoking incident. Physiological and self-report data revealed that the provision of mitigating circumstance information under high censure conditions reduced arousal and annoyance in participants who learned of mitigation only after they had been insulted and were highly aroused. This finding corroborates evidence provided by Zillmann and Cantor (1976) that mitigation acquired subsequent to insult may reduce physiological arousal, and extends this effect to emotional arousal as indicated by ratings of annoyance.

While the majority of findings substantiate predictions derived from the the attribution model, it was evident from noise delivery data that the effect of mitigating circumstance information on retaliation differed as a

function of the time at which information was made known to participants. While high mitigation and high censure combined to reduce the arousal and annoyance of subsequent speech participants to levels comparable to those found for prior mitigation subjects, there were marked differences in the retaliation of the two groups. Subjects who learned of mitigation prior to insult reacted less emotionally and retaliated less against the co-worker than did those in subsequent speech conditions who evidenced recovery from insult induced arousal and annoyance, but did not reduce their retaliation. Although the attribution position posits that mitigation is expected to have its primary effects on the instigation to aggression, the model would suggest that reductions in arousal and annoyance related to the receipt of mitigating circumstance information after the provoking incident should reduce retaliation.

Several explanations have been offered to account for the finding that the effect of mitigation on retaliation may be reduced when information becomes known after the provoking incident. In one account, Kremer and Stephens (1983) proposed that following an attack there is a critical time span within which an individual appraises the circumstances surrounding harm and decides how or whether to respond. According to these authors, mitigating circumstance information that is available prior or immediately subsequent to attack will have a greater impact on the

individual's appraisal of harm than when information is available after appraisal is completed and the cognitive system is no longer responsive to information. In a similar account, Zillmann et al. (1975) suggested that the failure of subsequently acquired mitigating circumstance information to affect reductions in the retaliation of highly aroused subjects may be due to an impairment of cognitive intervention associated with high levels of arousal. Because of this impairment, participants may evidence a narrowing of attention to situational cues (Easterbrook, 1959), and consequently fail to consider or respond to mitigating circumstance information. Alternatively, Zillmann et al. suggested that the failure to respond to mitigation may be due to a lack of concern about the consequences of retaliation such that once highly aroused by provocation, the individual fails to consider the relevance of information related to the provoking incident.

While these investigators did not include measures in their study appropriate to test these explanations, none of these hypotheses is supported by the present findings. Although prior speech participants recalled significantly more details of the co-worker's speech than those in subsequent speech conditions, there were no differences between these groups on the measure of memory for mitigating circumstance information. While the difference in memory observed for the total speech measure may well have

reflected a narrowing of attention on the part of subsequent speech subjects to primary cues, the essential information regarding provocation appeared to be equally represented in both prior and subsequent speech conditions at the time of retaliation. Further, suggestions that subjects viewed mitigating circumstance information as irrelevant once they were aroused, or failed to process information after a time delay, are not consistent with present findings that the emotional and physiological arousal of subsequent speech subjects was reduced once they learned of mitigation. Thus there was evidence that information concerning provocation was both attended to, and appeared to affect participants' reactions to the provoking incident.

In a subsequent investigation, Zillmann and Cantor (1976) obtained results similar to the present findings. Prior mitigation subjects reacted less emotionally to provocation and retaliated less toward an experimenter than did participants who learned of mitigation after insult, but whose physiological arousal had returned to base levels by the time of retaliation. To account for these findings, Zillmann and Cantor proposed that once subjects were angered by provocation they formed a behavioral disposition to retaliate which outlasted the state of elevated arousal. Thus, participants may have committed themselves to the retaliatory response which could not be altered by new information.

While the present data do not address directly the explanation provided by these authors, the finding that the effect of mitigation on annoyance and arousal differed with different levels of social censure suggests that subsequent speech participants in the present study had not fully formed a behavorial disposition to aggress immediately subsequent to anger, but rather considered the appropriateness of response options at the time that information was provided. Strong mitigation failed to affect annoyance and arousal when combined with low social censure, but reduced annoyance and arousal when inhibitions for aggressions were increased. This finding suggests that the response to provocation was altered by information acquired subsequent to provocation, but that the combination of cues concerning the appropriateness of aggression was less impactful once individuals had been aroused by provocation and failed to reduce retaliation. It can be speculated that somewhat stronger levels of mitigation and censure might combine to reduce retaliation in individuals who are highly aroused by a provocation and learn of mitigation subsequent to being angered.

In contrast to hypotheses that attribute the differential impact of attributionally relevant information on reactions to provocation to differences in the capacity to process information or motivational differences, Rule and her associates (Rule & Nesdale, 1976; Rule, Ferguson, &

Nesdale, 1979) have proposed that the relative importance or salience of attributionally relevant information may differ depending upon the current evaluative or decision making needs of the individual during the provocation - retaliation sequence. According to this view, the amount of attention directed to attributionally relevant information will vary depending upon whether the individual is attempting to appraise his initial reaction to provocation, or select a response that is appropriate to the situation. Cues concerning justifiability and intent should receive most attention, and thus receive more weight, when the individual is attempting to interpret his reaction to provocation, while cues related to response appropriateness will be more salient once the individual has labeled his reaction to provocation and is considering response options.

Applying this perspective to the provision of mitigating circumstance information at different times with respect to the provoking incident provides a basis for understanding the reduced impact of information which is acquired subsequent to provocation. Cues related to mitigating circumstances should command most attention at the time of provocation when the individual is attempting to appraise harm. The availability of information provided prior to provocation should influence the outcome of intent attributions, and thus, influence the reaction to provocation. However, when information about mitigating

circumstances is unavailable, as when provided after the provoking incident, the individual is more likely to be aroused and to perceive harm as intended and appraise his or her reaction as anger. Once the initial appraisal process is complete, the individual turns his or her attention to a consideration of response alternatives, and cues concerning mitigating circumstances which are provided at this time are less relevant.

As required by this model, prior speech participants who were aware of a strong excuse before being provoked, viewed the negative evaluation of their essays as significantly more justified, and thus presumably less intended, than did participants who learned of mitigation after the provoking incident. Although the physiological arousal and annoyance of subsequent speech participants under combined strong mitigation and high censure had declined by the time of retaliation, their greater retaliation relative to those in prior speech conditions would be expected by this model under the assumption that their greater initial annoyance and arousal to insult should result in an emotional state of anger.

While the cue salience model appears to account for the reduced impact on reactions to provocation of mitigating circumstance information that is acquired subsequent to provocation, the proposed differences in attention to attributionally relevant cues do not explain the finding

that social censure information failed to reduce the retaliation of angered participants. According to the model, once an individual has appraised his initial reaction to the provoking incident, attention is directed to the appraisal of response appropriateness and a consideration of inhibitions for aggression. However, while there was evidence indicating that participants in the present study experienced a greater degree of evaluation apprehension for negative behavior in high, relative to low censure conditions, retaliation was not affected differentially by social censure.

While the present data do not provide an explanation for the failure of social censure information to affect reductions in retaliation, several hypotheses can be offered to account for the reduced impact of inhibitory factors on aggression once an individual has been angered. First, the level of prior provocation experienced by an individual has been identified as an important factor in determining the effectiveness of punishment as an inhibitor of aggression (Dollard, et al., 1939; Berkowitz, 1962). Consistent with this assumption, Baron (1973) provided evidence that threatened retaliation was effective in inhibiting subsequent aggression when subjects had not been previously angered by the victim, but failed to affect aggression when participants had suffered provocation. Thus while Donnerstein and Donnerstein (1973) and Borden (1975) found

evidence that increased social censure was effective in inhibiting aggression by increasing subjects' apprehensions for retaliation against their targets, participants in these studies had not been previously provoked before the opportunity to aggress. Applied to the present experiment, these findings suggest that the level of motivation to aggress engendered by provocation may have outweighed the strength of inhibitory factors represented by social censure conditions and consequently, aggression was not reduced.

Second, because aggression is a characteristically dissapproved action, Zillmann (1979) proposed that the expression of aggression may be promoted through disinhibition. Consistent with this assumption Meyer (1972) found that witnessing justified aggression, compared to aggression presented as objectionable, can enhance aggression. Given the condition of prior provocation by the co-worker in the present study together with experimental instructions that legitimized noise delivery to the co-worker, participants may have preceived aggression as specifically approved. Thus, characteristics of the experimental situation may have lessened the impact of social censure information by establishing a contradictory set of expectations on the part of participants for aggressive behavior.

Finally, norms regarding the appropriateness of aggression evoked by the mitigating circumstance information

may have altered the strength of apprehensions for aggression associated with social censure information. Ferguson and Rule (1983) and Zillmann (1979) have suggested that an individual's moral evaluation of harm may influence considerations of social norms and lead to the sanctioning of harmful behavior. For instance, harm that is viewed as intended may be judged as more wrong and deserving of stronger sanctions than is harm that is viewed as accidental or unintended. Given that experimental conditions in the present study were intended to focus attention to mitigating circumstance information surrounding insult, participants may have been sensitized to considerations of the normativeness of insult and consequently failed to view retaliation as transgressive but rather as an appropriate sanction for their harsh treatment by the co-worker. The present findings provide tentative evidence for such a re-evaluation effect in that subsequent speech participants under combined high mitigation and high censure conditions expressed somewhat more freedom to deliver noise to the co-worker by a Duncan's Multiple Range Test, than did their prior speech counterparts, $\underline{M}s = 5.1$ vs. 3.6, $\underline{p} < .10$. Although Dyck and Rule (1978) have provided evidence that attack that is viewed as justified resulted in less anger and retaliation than did attack that was judged as intended, no evidence currently exists regarding the effect of an individual's moral evaluations of harm on his perceptions of inhibitions for aggression and subsequent retaliation. Harm

that is judged to have violated moral rules governing social behavior may evoke new internal standards of behavior more appropriate to the situation and reduce the individual's moral constraints for aggression and his consideration of inhibitory factors.

Although the present research focused on the issue of how an individual's evaluations of provoking circumstances affects the reaction to provocation and subsequent aggression, it is apparent from the foregoing explanations regarding inhibitions for aggression that a parallel process of cognitive appraisal may affect evaluations of constraints for aggression. While research indicates that anticipated sanctions for aggression may reduce retaliation under certain conditions, cues concerning harm may have meaning as justification for aggression, and thereby reduce inhibitions for expressing aggression. Consequently, one implication of the present study is that future research is needed to determine how the perceivers' interpretation of instigating conditions and information processing goals directly affects the perception of inhibitions for aggression and retaliation.

In summary of the present findings, the available evidence suggests that mitigating circumstance information that is known prior to the provoking incident affects the emotional reaction to provocation by influencing the individual's interpretation of the harmful event. Events

that are viewed as less intended are less likely to result in anger and aggression. However, mitigating circumstance information that becomes known after the provoking incident appears less likely to influence retaliation once the individual reacts emotionally to the provoking incident. This finding may reflect the individual's shift of attention from cues related to explanations surrounding the provoking incident to a consideration of inhibitory factors for aggression. As a consequence, cues concerning mitigation will be more relevant and more likely utilized when available at the time of provocation, but receive less weight when acquired after the individual has interpreted his reaction to the provoking incident and anger has been aroused. Further, it is suggested that the individual's appraisal of circumstances surrounding harm may affect the perception of sanctions for aggression.

While this pattern of findings is consistent with assumptions that cognitions regarding the provoking incident mediate the link between harm and the motivation to aggress, they do not provide direct evidence concerning the mechanism by which cognitions exert their influence on reactions to provocation. Zillmann (1979) has proposed that the appraisal of prior mitigation prepares the individual for an attack such that attack is preattributed to causes other than the victim's behavior. In this view, knowledge of mitigating circumstance information prior to provocation may alter the

individual's expectations for favorable social interaction such that harm, when it occurs, is less unexpected. More generally, attributional explanations deriving from a cognitive labeling perspective of aggression view the emotional reaction to provocation as resulting directly from the individual's interpretation of instigating conditions such that the specific emotional response is determined by the cognitive appraisal of cues surrounding harm. Alternatively, Berkowitz (1983) and Leventhal (1980) have proposed that attributional appraisals of instigating conditions only combine with specific emotional responses elicited by the percipitating event and thus exert a modifying influence on the reaction to provocation. While the present data do not suggest which of these explanations most plausibly accounts for the reduction in annoyance and aggression under prior information conditions, angered participants in the present study reacted more emotionally to provocation than did their nonangered counterparts. Although this finding may suggest that attributions for harm exerted a controlling, rather than eliciting influence on the initial emotional reaction to provocation, stronger levels of mitigation for harm conceivably could have eliminated reactions to insult on the part of participants. Thus, while it is clear that cognitive appraisals of the provoking circumstances exert a powerful influence on the emotional reaction to harm and retaliation, future research must be undertaken to provide a more detailed assessment of

both the types of cues that promote reductions in aggression and the boundary conditions within which attributional appraisals of harm affect retaliation.

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Appendix A

Instructions to Participants

I. Introductory Remarks

Hi. My name is _____ and I will be your experimenter. In today's study, we are doing some preliminary testing of different tasks that we hope to use in a main experiment to investigate task performance. Usually, before an experiment can be run, all the different tasks and materials must be tested to make sure they will work, and this is what you will be helping me with today.

Ok, if you will take a seat at the table in this room, and you in this room, I will continue with the instructions over the intercom. So just go in and put the headphones on and we will begin in a moment.

**** E continues with standard taped instructions.

Your part in this study will be to perform a couple of tasks together and I will be measuring your physiological responses while you work on the tasks. What we hope to do after this pilot work is completed is to select three or four tasks that differ in the amount of effort that is required to perform them.

Now we have asked two of you to participate today because in the main study we are interested in how individuals perform tasks in the presence of an audience. That is, we are interested in how the performance of a task might differ when it is performed alone, compared to when it is performed in front of others.

This area of research, termed social facilitation research, has generally demonstrated that individuals will perform simple tasks better in the presence of an audience, but that more difficult tasks are performed better when the individual works alone.

In their attempts to explain such findings, researchers have advanced two different explanations of why simple tasks are performed better in the presence of an audience than more difficult tasks. One explanation, termed the arousal theory, suggests that the presence of an audience is both physically and mentally arousing, and that moderate levels of arousal are expected to facilitate or enhance the performance of simple tasks but to actually interfere with complex tasks which require greater mental effort and concentration. According to this theory, we would expect the relationship between arousal and task difficulty to look like the curve on graph #1 in front of you. That is, as

arousal is held constant while task difficulty increases, performance on the task is expected to follow this "inverted U-shaped" curve; as the task becomes more difficult, arousal begins to interfere with concentration, and performance of the task declines. So, if we know how aroused an individual is by an audience and how difficult his task is, we would be able to predict his level of performance by referring to a curve like the one on the graph.

The second explanation of these differences in the performance of simple and complex tasks in the presence of an audience is termed task evaluation theory. According to task evaluation theory, arousal is expected to interfere with task performance in much the same way that arousal theory predicts. Once again physical and mental arousal are expected to help us to perform simple tasks but to interfere with more complex tasks that require greater concentration and mental effort. The major difference between the two theories is that arousal theory states that the audience <u>always</u> arouses the individual, simply because an audience is present, while task evaluation theory states that the level of arousal experienced by the task worker will depend on the worker's belief that others are evaluating his performance on the task. According to this theory, the more <u>critical</u> the audience is perceived to be by the worker, the more aroused the worker will become, and performance on the task is likely to be poorer. Or, if the audience is perceived to be supportive rather than critical, then no arousal will result and performance should be about the same as if the individual were working alone. If we consider different types of audiences then, the relationship between arousal and task difficulty might look like the curve on graph #2.

Of course it would be very useful to know which of these two explanations is correct in order to recommend to educators, for instance, the kind of situations that will help students to learn more efficiently or make mastery of a task easier. So, if we find task evaluation theory to be a better predictor of complex task performance than arousal theory, we would suggest to educators and teachers that students would likely master material more quickly if the teacher were to concentrate somewhat less on evaluating students' performance, and concentrate more on teaching enjoyment of the task. On the other hand if arousal theory appears more valid, it might be suggested that individual study, rather than group study, would likely lead to better learning.

Now, before we can actually begin to investigate which of these two theories is most correct, it is necessary first to know how aroused people become by different types of tasks and different types of audiences; and that is what this study is concerned with. So in the pilot work we are

attempting to measure how aroused individuals become when they perform a task that is evaluated by another person. Once we know how arousing these tasks are, we can select some of them for use in the main study to investigate performance differences when different types of audiences are present.

As I mentioned your part in this experiment will be to perform a couple of tasks together, and I will be measuring your heart rate and blood pressure to see how arousing each task is. During the tasks I will periodically ask you to report how aroused you feel on a number of rating scales which I will use to help interpret the physiological measures. This is important because if you are aroused it could be due to something unrelated to the task like drinking a cup of coffee just before the experiment, or worring about an exam that you have later in the day. Or if you are not aroused by the task it may be simply that you happen to be bored or tired . And because some tasks are more arousing than others or your feeling of arousal or tiredness may change during the experiment, I will ask you to fill out a short rating form a number of times throughout the session.

Ok. Now, in order to make the tasks arousing, you may be asked to both administer and receive aversive noise during some of the tasks. The noise is not dangerous or harmful in any way, but you may find it annoying or uncomfortable. The tasks are not difficult or dangerous, but please understand that you are free to refuse to participate if you don't want to and you will still receive credit for the experiment. So before we start the experiment then, I will need to obtain your consent for participation. Just relax and I will be in to see each of you in a moment to see if you want to continue and to answer any questions you may have.

**** E proceedes to each room to obtain consent and answer questions.

** At this point E returns to first S to attach the blood pressure cuff and heart rate monitor with the following instruction:

The fingerclip you are wearing will monitor your heartbeat and this cuff, of course, is to record your blood pressure. Both the ear clip and cuff operate at less voltage than a transistor radio so there is no danger that you can be shocked or hurt in any way. The blood pressure cuff will inflate and deflate automatically about 10 times during the session. The pressure that you will feel is not strong enough to hurt your arm, but if it bothers you in any way simply take the cuff from your arm. I will give you a couple of trials so you can see how it feels. (E gives demonstration of cuff operation).

Evaluation Apprehension Manipulation.
Low Apprhension:
The only other thing I should mention at this point is that I will be taping today's session on the video monitor ..... but it has nothing to do with the experiment. My video recorder broke last week and the shop needs some test tape so they can locate the problem.
High Apprehension:
The only other thing I should mention at this point is that I will be taping this session on the video monitor ..... for viewing by the University Human Ethics Committee. It will make it much easier to gain approval for the main experiment if they can view a couple of these test sessions, and the type of tasks we are using.
Continues with standard instruction

OK, now I would like you to sit quietly while I record your resting rates and attach the other S to the HR monitor. For convenience, I will address both of you through your earphones for most of the study in order to explain the tasks and give you intructions. Remember that you are in Condition No 1 and the other subject is in Condition 2. For now, just relax until we begin.
(E proceedes to room 1, S1)
OK, this fingerclip is used to record your heartbeat and operates on less voltage than a transistor radio, so there is no danger that you can be shocked or hurt in any way.
** Evaluation Apprehension manipulation here; same as above.
Now I would just like you to sit quietly for a few minutes while I record your resting HR. For convenience I will address both of you through your earphones for most of the study in order to explain the tasks and give you instructions. Remember that you are in Condition No 1 and the other subject is in Condition 2. For now, just relax until we begin.
(E returns to Exp room to check recording levels for base line measures)
E to both S's - pre-tape recorded instructions (both S's assume that they are S #1)

Ok, before I give you your instructions for the first task, you will notice that there is a file folder on the table in front of you. If you will open the folder, you will find three rating scale forms that you will use throughout the experiment to rate your arousal level. Each sheet contains words and phrases that describe different kinds of arousal. For each item on the sheet, circle the number on the scale that best describes how you feel right now. OK go ahead and fill out the first sheet and when you have finished, turn it face down and place it somewhere on the table out of your way.
*** (30 sec wait to fill out scale)

Ok, please listen carefully while I explain the first evaluation tasks. This first task will be divided into two phases, the task phase and the evaluation phase. While your tasks will be similar, the evaluations for each task will be different. First, Subject #1, your task will be to write a short, 1-page solution to a social problem which will be evaluated by subjet #2. Because you are in the "critical audience" condition, Subject #2 will evaluate the quality of your solution in two ways: by providing a written evaluation, and by delivering a noise rating according to the rule that the poorer your solution, the more noise you will receive. Subject #2, your task will be to prepare a short speech about your background, hobbies, university work, career plans and experiences. During the evaluation phase you will deliver this speech to Subject #1 over your microphone. Because you are in the "mere presence" audience condition, Subject #1 will not evaluate your speech in any way, but will listen only. You will both have about 6 minutes to work on your tasks. Ok, just relax and I will see each of you in a moment to answer questions and give you materials for your task.
***** (materials to Ss: essay form, outline of speech topics.) ****
(E enters each room to answers questions and to reiterate portions of previous instructions.)
Five minutes elapsed time:

Ok, you have 1 minute left to finish your tasks. If you are not quite done just note your remaining points in outline form.

Alright, time is up. Please fill out the second arousal rating from now, and I will be in in a moment to collect materials and give you instructions for the evaluation phase of your tasks.
*** Prior mitigation conditions.
**** E proceedes to each room to collect materials and to deliver the following instruction:

Ok thanks. Now before we get to the evaluation phase of your task, Subject #2 will deliver his speech. All you have to do for this part is listen so you can relax for a few minutes. Here is a list of topics that Subject #2 was asked to cover so that you can follow along.
***** Speech Here (HI-LO) Mitigating information) *****
****** (E over headphones:)

Ok, before we proceede, please fill out your next arousal rating form (30 seconds).

Alright, Subject #2, now I would like you to read and evaluate Subject #1's essay and rate the essay using the essay rating form that I gave you. You have about 1 minute

to read the essay and decide on your rating. I will signal you when it is time for the noise evaluation.
E enters each room to collect scales and deliver following instruction:

Ok Subject #2 is reading your essay and making his evaluation. When he is finished he will rate your task performance with blasts of noise over your earphones. If he feels that your solution is very good, he is instructed to deliver only 1 or no noise blasts, or if he decides it is a poor solution he is instructed to deliver 8 or 9 blasts. If he feels your solution is somewhere in the middle between poor and good you will hear 4 or 5 noise blasts. So when the give light on your console lights-up that is the signal for the noise evaluation and you will hear between 0 and 10 noise blasts. Remember to sit quietly so that I can get an accurate record of your physiological response while you receive your evaluation.
ANGER MANIPULATION
***** S receives 9 bursts of 350-Hz square wave noise at 0.5 sec. and 95 dBA per burst. ****** Control receives 4 bursts *******
**** E enters each room and delivers the following instruction:

Ok, please read your written evaluation and then fill out this next arousal rating scale for me. I'll explain the next task to both of you over your earphones again.
**** Subsequent mitigation conditions.

The procedures for essay rating first, and speech second are identical to those described above and require no additional instruction. The order of the two tasks is simply reversed.

**** Teacher-learner task
**** E to both S's:

Alright, so far so good. This next evaluation task is a co-worker task in which Subject #2, you will serve as a learner and Subject #1, you will serve as a teacher. Subject #2, your task will be to perform a paired-associate learning task under threat of evaluation by aversive noise. In a minute, I will come in and give you a list of paired syllables and you will have 3 minutes to learn which pairs of syllables go together and then you will be tested on your knowledge by Subject #1.

Subject #1, your job as evaluator will be to monitor the responses of Subject #2 using the three lights on the left side of your console. If Subject #2's response is correct, you should push the button labeled correct on your console. However, if his response is incorrect, you will

evaluate him by pushing one of the 7 noise buttons on your console where button 1 is a soft level of noise, and button 7 is a loud level. Ok, now both of you just relax and I will be in in just a minute to give you materials and answer questions.
**** (E enters rooms.)

Ok, you will be evaluating Subject #2 on his learning performance. The reason that we are using different levels of noise in this task is that loud noise is is much more arousing than soft noise, and louder levels of noise should interfere with his ability to concentrate and learn the list. He has been instructed to concentrate as hard as possible and to try and do as well as he can on the task. Your job will be to monitor his responses using these lights on your console and to evaluate him with the correct button if he gives the right answer, or one of the seven noise buttons if his answer is incorrect. Here is a copy of the list that Subject #2 is learning and here is the test list you will use with the correct answers circled. When this light marked GIVE comes on the first time, Subject #2 will see the test word and he will press button 1, 2, or 3 to indicate his response. His selection will show-up on your console as light 1, 2, or 3. So if he chooses response 1, this light will light-up; this light for response 2 and this light for 3. If he chooses the correct response - wait for the give light to flash <u>twice</u> and push the correct button. If his answer is wrong, wait for the give light to flash <u>twice</u> and then push one of the 7 noise buttons, where 1 is the softest noise and 7 is the loudest. Each time you push a button Subject #2 will hear an aversive noise over his headphones. These noises are quite annoying but are not harmful and can not harm his hearing in any way.
As far as this experiment is concerned, it really doesn't matter which levels of noise you choose as I'll have to run a lot of subjects to get enough physiological measures at all the different levels. So just go ahead and select whatever level you wish for each trial.

Ok, remember, when the give light comes on once, wait for Subject #2 to respond, and record his response, either 1, 2, or 3 on your sheet. When the give light flashes twice, present your evaluation by pushing one of the buttons on your console. After this the give light will light once again to indicate the start of the second test trial, and so on. So start with item 1 and proceede through the list in order until all 30 trials are complete. If he doesn't respond before the evaluation light lights twice, consider that an incorrect response. Any questions?

Ok, just relax until I give the signal to begin over your earphones. ***** E returns to the control room and gives the signal to begin:

Ok, we are ready to begin. Subject #1, wait for Subject#2 to indicate his response and then deliver your evaluation.
***** 10 trials here *****

Alright very good, please fill-out your final arousal rating scale and I will be in to see each of you in a moment.
***** E enters each room to collect materials and distribute the final experiment questionnaire; and MEMORY TASK.

Before you go, there is one more thing we would like you to do. In order to make our data as complete as possible, we ask all subjects to fill out this confidential questionnaire, which is designed to supplememt our objective data with your subjective impressions and evaluations of the experiment. Please go ahead and begin and do not spend too much time on any one item. Remember, do not put your name on the questionnaire as all the responses are confidential. We will leave the physiological equipment attached until your are finished, so try and remain as still as possible. When you are finished, remove your fingerclip (and blood pressure cuff) and wait for me to return.

Appendix B

Essay Task

INSTRUCTIONS: In the space below you are to write a short essay on the topic of Energy Conservation. In writing your essay: (a) state why you think energy consumption has become an important issue in Canada; and (b) propose a number of ways that energy might be conserved. You have approximately six minutes to work on your essay. (You may use the back of the page, if necessary.)

Appendix C

Speech Task

INSTRUCTIONS: In the space below you are to prepare a short speech. During the evaluation phase of this task, you will deliver your speech to Subject #1. In preparing your speech, you are to address the following six topics:

1) your background; 2) university work; 3) career plans; 4) hobbies;

5) your best recent experience; and 6) your worst recent experience.

You have approximately six minutes to prepare your speech.

Appendix D

Transcript of Mitigating Circumstance Information Speeches

Introduction to all speeches:

** Background

Uh .... ready? ..... My name is Jim and I was born in Toronto. We moved to Edmonton when I was about three ..... uh, and I went to grade school and high school here ..... at Harry Ainley, and now I'm in my second year university.

** University work; Career plans

This year, I'm taking mostly science courses and .. uh .. when I finish I want to go to med school. My dad is a GP in the city and he wants me to take over his practice when I'm done.

University is pretty good, I guess; but it takes a lot of work to get into med school.

** Hobbies

Uh .....,for hobbies I like sports, I guess, and sometimes I try to play some hockey. I try to get in some backpacking every summer .... especially around the Jasper area. Uh ..... also I like movies quite a bit and try to watch that new movie channel, First Choice. I guess I've seen Star Wars about six times now. I like to play chess quite a bit too.

** Best recent experience

I guess the best thing that happened to me recently was that I got a 9 in my last biology exam ..... Oh yeah .. and I did some skiing in Banff over Christmans.

Mitigating circumstance manipulations:

** Worst recent experience: Low condition.

The worst thing I guess .... happened to me this morning, and I'm still pretty "pissed off" about it. The prof in my chemistry class gave me a 7 on the lab exam, when I know I should have had at least an 8. I went and talked to him about it -- but he won't change it and I really need good grades to get into med school. I'm kind of worried that this might drop my grade point average this term but I'm sure I'll get an 8 in the course. .....Anyway ..... that's the worst lately; ..... Uh, I guess that's it.

High mitigating circumstance condition.

** Same as above with exception that "worst recent experience" topic is altered with respect to consequences.
** worst recent experience

The worst thing I guess .... happened to me this morning, and I'm still pretty "pissed off" about it. The prof in my chemistry class gave me a 7 on the lab exam, when I know I should have had at least an 8. I went and talked to him about it -- but he won't change it and I'm sure I'll get a 7 in the course now. My Science advisor told me that if I don't get at least an 8 in all my classes this term that I can forget Med school because my marks will be too low. I don't know what I would do then. Anyway ..... that's the worst lately; ..... Uh, I guess that's it.

Appendix E

Essay Evaluation Form

INSTRUCTIONS: Please read the attached essay and evaluate the essay by circling one number on each scale below. In making your evaluation, consider whether the arguments and ideas are presented in a logical fashion, and whether the solution given is workable or feasible. Consider writing style but ignore spelling errors.

Items (The response formats for the items below consisted of 7-point category rating scales; scale value indicating the co-worker's rating are indicated to the right of the item.)

1. Overall, the essay:
   a. is poorly written - is well written 4
   b. shows poor development - shows good development 3

2. In general, the solution presented is:
   a. extremely bad - extremely good 2
   b. completely unworkable - completely workable 3
   c. extremely unimaginative - extremely imaginative 1

3. After reading this essay, how would you evaluate the writer?
   a. not at all creative - extremely creative 1
   b. very unintelligent - very intelligent 4
   c. probably a poor student - probably a good student 3

4. This space is for your written comments:

Comment provided by the co-worker:

"I gave this guy a low rating because his solution was pretty dumb."

Appendix F

Arousal Checklist

INSTRUCTIONS: The words in the list below descirbe different kinds of arousal. For each word in the list, circle the number on the scale that best describes how much you feel that way, right now.

	NOT AT ALL						VERY MUCH
TENSE	1	2	3	4	5	6	7
DISTRACTED	1	2	3	4	5	6	7
AROUSED	1	2	3	4	5	6	7
TIRED	1	2	3	4	5	6	7
DROWSY	1	2	3	4	5	6	7
EXCITED	1	2	3	4	5	6	7
ENERGETIC	1	2	3	4	5	6	7
SLUGGISH	1	2	3	4	5	6	7
ANNOYED	1	2	3	4	5	6	7
ANGRY	1	2	3	4	5	6	7
CONCENTRATING	1	2	3	4	5	6	7
ANXIOUS	1	2	3	4	5	6	7
ELATED	1	2	3	4	5	6	7

Appendix G

Questionnaire Measures

Instructions to participants:

A major purpose of this pilot study is to select tasks and evaluations that vary in how arousing they are. Your responses to this questionnaire will help us to evaluate the tasks that you participated in today. Specifically, we wish to know if you found the tasks to be arousing, and if you did feel aroused, whether your feelings were due to the tasks, evaluations, interactions with other participants, or some other aspect of the experiment such as the blood pressure cuff or heart rate monitor. Do not put your name on this questionnaire. Your responses are confidential, so please answer the questions openly. When you have finished, please seal your questionnaire in the attached envelope.

For each of the following items, circle the number that best represents how you felt during the experiment.

Items (The response formats for the items consisted of 7-point category rating scales.)

Essay Task

1. Overall, how aroused did you feel during the essay writing task? (not at all aroused - extremely aroused)

2. To the extent that you felt any kind of arousal, to what extent was your arousal:
   a. due to writing an essay? (not at all - completely)

   b. due to the evaluation you received by the other subject? (not at all - completely)

   c. due to the general situation as a whole? (not at all - completely)

3. Rate your own performance on the essay writing task: (extremely poor - extremely good)

4. How difficult did you find the essay writing task? (not at all difficult - extremely difficult)

5. To what extent was your essay evaluated fairly by the other subject? (not at all - completely)

6. To what extent do you feel that the evaluation you received was justified? (not at - completely)

7. Rate your general feelings during the essay task:
    a. motivated (not at all - very much)
    b. relaxed
    c. interested
    d. frustrated
    e. upset
    f. pleased
    g. angry

Teacher-learner Task

13. Overall, how aroused did you feel during the TEACHER-LEARNER co-worker task? (not at all aroused - extremely aroused)

14. To the extent that you felt any kind of arousal, to what extent was your arousal:
    a. due to the task you performed? (not at all - completely)

    b. due to the other subject? (not all - completely)

    c. due to the general situation as a whole? (not at all - completely)

15. Rate your own performance on the teacher-learner task: (extremely poor - extremely good)

16. How difficult did you find the teacher-learner task? (not at difficult - extremely difficult)

17. Rate your general feelings during the teacher-learner task:
    a. motivated (not at all - very much)
    b. relaxed
    c. interested
    d. frustrated
    e. upset
    f. pleased
    g. angry

18. Rate the task performance of the learner on the following scales:
    a. performance (very poor - very good)
    b. motivated (not at all - highly motivated)

19. On average estimate the level of noise that you delivered to the learner: (usually low levels - usually high levels)

20. Rate your feelings about delivering noise to the learner on the following scales:
    a. not at all appropriate - very appropriate
    b. not at all apprehensive - very apprehensive

c. not at all pleased - very pleased
d. not at all guilty - very guilty
e. free to use any level - not free to use any level

Co-Worker Interactions

24. Please rate your co-worker on the following scales:
a. polite - rude
b. competent - incompetent
c. likable - unlikable
d. friendly - unfriendly
e. tried hard - did not try

25. How willing would you be to work on another co-worker task with this person? (not at all willing - very willing)

APPENDIX H.1

Summary of Analysis of Variance of
Heart Rate Change Scores

Source of Variation	SS	DF	MS	F
A (Speech Order)	1149.21	1	1149.21	8.19 **
B (Mitigation)	696.96	1	696.96	4.97 *
AB	228.01	1	228.01	1.63
C (Social Censure)	82.81	1	82.81	0.59
AC	231.04	1	231.04	1.65
BC	234.09	1	234.09	1.67
ABC	615.04	1	615.04	4.38 *
S(ABC)(Error)	10102.69	72	140.35	
D (Trials)	5680.29	4	1420.07	37.28 **
AD	101.21	4	25.30	0.66
BD	149.61	4	37.40	0.98
ABD	98.87	4	24.72	0.65
CD	54.07	4	13.52	0.36
ACD	55.54	4	13.88	0.37
BCD	177.03	4	44.26	1.16
ABCD	497.79	4	124.45	3.27 *
DS(ABC) (ERROR)	10969.72	288	38.09	

* $p < .05$

** $p < .01$

APPENDIX H.2

Summary of Analysis of Variance of Change Scores for Participants' Self Attributions of Arousal

Source of Variation	SS	DF	MS	F
A (Speech Order)	24.02	1	24.02	7.58 **
B (Mitigation)	0.22	1	0.22	0.71
AB	1.22	1	1.22	0.39
C (Social Censure)	0.90	1	0.90	0.28
AC	8.10	1	8.10	2.56
BC	3.60	1	3.60	1.14
ABC	2.50	1	2.50	0.79
S(ABC)(Error)	228.20	72	3.17	
D (Trials)	0.90	1	0.90	1.30
AD	0.10	1	0.10	0.14
BD	0.40	1	0.40	0.58
ABD	0.10	1	0.10	0.14
CD	3.02	1	3.02	4.36 *
ACD	0.02	1	0.02	0.04
BCD	1.22	1	1.22	1.76
ABCD	0.22	1	0.22	0.32
DS(ABC) (ERROR)	50.00	72	0.69	

* $p < .05$

** $p < .01$

APPENDIX H.3

Summary of Analysis of Variance of Change Scores for Participants' Ratings of Annoyance

Source of Variation	SS	DF	MS	F
A (Speech Order)	6.01	1	6.01	1.69
B (Mitigation)	1.41	1	1.41	0.40
AB	6.01	1	6.01	1.69
C (Social Censure)	17.65	1	17.65	4.94 *
AC	2.76	1	2.76	0.76
BC	2.26	1	2.26	0.63
ABC	4.56	1	4.56	1.28
S(ABC)(Error)	256.15	72	3.56	
D (Trials)	79.81	1	79.81	64.31 **
AD	1.14	1	1.14	1.13
BD	2.26	1	2.26	1.82
ABD	0.16	1	0.16	0.13
CD	0.76	1	0.76	0.61 *
ACD	2.76	1	2.76	2.22
BCD	0.01	1	0.01	0.01
ABCD	6.01	1	6.01	4.84 *
DS(ABC) (ERROR)	89.35	72	1.24	

* $p < .05$

** $p < .01$

APPENDIX H.4

Summary of Analysis of Variance of Participants' Ratings of Anger Due to the Essay Evaluation

Source of Variation	SS	DF	MS	F
A (Speech Order)	1.51	1	1.51	0.54
B (Mitigation)	1.51	1	1.51	0.54
AB	1.51	1	1.51	0.54
C (Social Censure)	23.11	1	23.11	8.17 **
AC	2.81	1	2.81	0.99
BC	0.11	1	0.11	0.04
ABC	0.61	1	0.61	0.22
S(ABC)(Error)	203.70	72	2.83	

* $p < .05$

** $p < .01$

APPENDIX H.5

Summary of Analysis of Variance of the Level of Noise Delivered to the Co-worker

Source of Variation	SS	DF	MS	F
A (Speech Order)	1.22	1	1.22	1.50
B (Mitigation)	3.37	1	3.37	4.15 *
AB	6.45	1	6.45	7.94 **
C (Social Censure)	0.83	1	0.83	1.02
AC	0.09	1	0.09	0.12
BC	0.41	1	0.41	0.51
ABC	5.37	1	5.37	6.61 *
S(ABC)(Error)	58.46	72	0.81	

* $p < .05$

** $p < .01$

APPENDIX H.6

Summary of Analysis of Variance of Participants' Ratings of the Co-worker: Rudeness

Source of Variation	SS	DF	MS	F
A (Speech Order)	0.20	1	0.20	0.09
B (Mitigation)	0.20	1	0.20	0.09
AB	0.00	1	0.00	0.00
C (Social Censure)	1.80	1	1.80	0.81
AC	0.00	1	0.09	0.00
BC	9.80	1	9.80	4.41 *
ABC	5.00	1	5.00	2.25
S(ABC)(Error)	160.00	72	2.22	

* $p < .05$

** $p < .01$

APPENDIX H.7

Summary of Participants' Ratings of Their Willingness to Work With the Co-worker on Another Occasion

Source of Variation	SS	DF	MS	F
A (Speech Order)	14.54	1	14.54	6.62 *
B (Mitigation)	8.45	1	8.45	3.87
AB	0.80	1	0.80	0.37
C (Social Censure)	3.20	1	3.20	1.47
AC	4.05	1	4.05	1.86
BC	0.45	1	0.45	0.21
ABC	0.20	1	0.20	0.09
S(ABC)(Error)	157.20	72	2.18	

* $p < .05$

** $p < .01$

APPENDIX H.8

Summary of Analysis of Variance of Participants' Ratings of the Co-workers Motivation During the Teacher-learner Task

Source of Variation	SS	DF	MS	F
A (Speech Order)	11.25	1	11.25	9.06 **
B (Mitigation)	4.05	1	4.05	3.26
AB	1.25	1	1.25	1.01
C (Social Censure)	0.00	1	0.00	0.00
AC	0.20	1	0.20	0.16
BC	0.80	1	0.80	0.64
ABC	5.00	1	5.00	4.03 *
S(ABC)(Error)	89.40	72	1.24	

* $p < .05$

** $p < .01$